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ABSTRACT

This document is comprised of six technical reports detailing the methods and findings of the first major study in the United Kingdom to focus on the effectiveness of early years education. The Effective Provision of Pre-School Education Project (EPPE) studies the progress and development of 3,000 children in various types of preschool and recreation classes for 5 years. The research involves 140 local authority, voluntary, and private preschool centers in a range of localities. The technical reports are as follows: (1) "An Introduction to the EPPE Project," describing the research design; (2) "Characteristics of the EPPE Project Sample at Entry to the Study," presenting findings of detailed multilevel analysis on entry assessments, measures of social and behavioral development, and parent interview data; (3) "Contextualising EPPE: Interviews with Local Authority Co-Ordinators and Centre Managers," examining the impact of government initiatives on early childhood care and education in the full range of preschool centers; (4) "Parent, Family and Child Characteristics in Relation to Type of Pre-School and Socio-Economic Differences" considering how the variation in sample characteristics is related to different types of preschool centers and to socioeconomic status; (5) "Characteristics of the Centres in the EPPE Sample: Observational Profiles," using the Early Child Rating Scale to assess preschool providers in the sample; and (6) "Characteristics of Pre-School Environments," a short version of the sixth report. An "Overview of the Project" is appended. (KB)

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The Effective Provision of Pre-School Education (EPPE) Project:

A Longitudinal Study Funded by the DfEE, 1997-2003

Technical Papers 1 - 6a

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The Effective Provision of Pre-School Education (EPPE) Project

Technical Paper 1

An Introduction to the EPPE Project

A Longitudinal Study funded by the DfEE
1997-2003

Technical Paper 1
AN INTRODUCTION TO THE EPPE PROJECT

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The EPPE project is a major five year study funded by the DfEE. The research would not be possible without the support and co-operation of the six Local Authorities (LAs) and the many pre-school centres, primary schools, children and parents participating in the research. The important contribution of the Regional Research Officers Anne Dobson, Isabella Hughes, Marjorie Jeavons, Margaret Kehoe, Katie Lewis, Maria Morahan, Sharon Sadler and our part-time Research Assistants has been vital to the project's completion. We are grateful to both the project's Steering and Consultative Committee for their helpful advice on the study.

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Contents

Page Number

Executive Summary i

Background to the research 1

Research from other countries 1

Research on the effects of Early Education in the UK 4

Research methods 5

EPPE in overview 5

The 8 aims of the EPPE project 5

The sample : regions, centres and children 6

Child assessments 7

Measuring child/family characteristics known to have an impact on children's Developemement 9

Pre-school Characteristics and Processes 9

Case Studies 10

Analytic Strategy 10

Identifying individual centre effects and type of provision at entry to the school 11

Identifying continuing effects of pre-school centres at KS 1 11

The Linked Study in Northern Ireland 1998-2003 12

Summary 12

Technical Papers in the Series/ Ordering details 14

References 15

Figure 1 : Perry Pre-school (High/Scope) Outcomes 20

Figure 2 : Plan of Study 21

Appendix : Multilevel Methodology 22

Technical Paper 1

An Introduction to the EPPE Project

EXECUTIVE SUMMARY

This paper describes the research design used in the study of Effective Provision of Pre-school Education (EPPE) funded by the UK Department for Education and Employment. This five year longitudinal study assesses the attainment and development of children between the ages of 3 to 7 years. Research began in 1997 and both quantitative and qualitative methods (including multilevel modelling) are used to explore the effects of pre-school education on children's attainment and social/behavioural development at entry to school and any continuing effects on such outcomes two years later at the end of Key Stage 1 (age 7). In addition to centre effects, the study investigates the contribution to children's development of individual and family characteristics such as gender, ethnicity, language, parental education and participation in employment. This paper outlines the research design and discusses a variety of research issues (methodological and practical) in investigating the impact of pre-school provision on children's developmental progress. It sets the design of EPPE within the context of other research studies on the effectiveness of early education and care. A parallel study is being carried out in Northern Ireland and this too is described.

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BACKGROUND TO THE RESEARCH

There has been a rapid expansion of policy and programmes for young children and their families in Britain. First there were 'educational vouchers' and the Desirable Learning Outcomes (DfEE 1996), followed soon by Early Years Development and Childcare Partnerships (DfEE 1999a, b), and then by Sure Start programmes intended to promote social inclusion in targetted areas (DfEE 1999c). These are but a few of the recent initiatives intended to improve educational outcomes for young children. Will these schemes work? Will children enter school 'more ready' to learn or perform better at Baseline Assessment (DfEE 1998)? Which are the most effective ways to educate young children? The research project described in this paper is part of the new emphasis on ensuring 'a good start' for children. Its research methods draw on several well known traditions of investigation but its **content**, the questions it seeks to answer about 'effective' ways to educate and care for children, is both contemporary and practical.

Research from other countries

It is in the USA that the most extensive studies of early education have been carried out. Research has shown positive short-term effects of early childhood programmes such as Head Start, a community-based pre-school programme which features early childhood education and parental involvement. In many (but not all) research studies children's participation in Head Start immediately before school had a significant short-term positive impact on academic and social development (McKey, Condelli, Ganson, Barrett, McCokey & Plantz 1985; Lazar & Darlington 1982a;1982b). The major doubts about the effectiveness of Head Start do not concern short-term benefits but rather the long-term impact. Although many authors praise the parental and community involvement which is so central to Head Start (Zigler & Styfco 1993), Head Start programmes vary in quality from state to state and even city to city. Perhaps because of such diversity, few large scale research studies have found lasting, positive outcomes.

A series of meta-analyses carried out on 'experimental' early childhood interventions provides a more optimistic picture. The authors limited their selective meta-analysis to pre-school programmes planned from the start as research projects. Each individual project had an adequate sample size, used norm-referenced assessment tests to establish outcomes, assessed outcomes for comparison/control groups, and followed children well beyond entry to primary school. By these strict criteria the results of 11 carefully monitored programmes were subjected to meta-analysis, a statistical exercise which enables researchers to compare the size of effect across many different studies. Almost all were aimed at disadvantaged children and all were of high quality although small-scale. Lazar and his colleagues compiled information on education and employment of more than 2000 individuals who had participated in early intervention programmes before they entered school. In addition, the researchers carried out interviews with the young adults at age 19 and their families. Results from the meta-analysis showed that attendance at excellent, cognitively oriented pre-school programmes was associated with later school competence and avoidance of assignment to 'special' education. Interviews revealed the parents of children who had participated in the intervention programme had developed higher aspirations for employment of their children. This research suggested that the long-term effects of early childhood education lay not with intellectual gains but with children's remaining in mainstream education and developing positive views of themselves and their futures. Note however that these high quality programmes were set up for 'demonstration' and 'research' – making generalisation to all early childhood programmes impossible.

In 1990 Barnett published a review of early interventions. He added to the original II studies cited in Lazar and Darlington six further studies on large-scale, public pre-school programmes, with follow-up periods ranging from 3 to 12 years. Barnett also came to the conclusion that early childhood interventions had significant long-term effects on the following outcomes: assignment to special needs education, retention at grade and school drop-out. Across the 17 programmes reviewed by Barnett, 48.5 per cent fewer 'intervention' children were placed in special education classes, 32 per cent fewer were retained in grade, and there were 26 percent fewer drop-outs.

Slavin and his colleagues (Slavin et al. 1994) took a different analytic strategy to those who carried out the two meta-analyses described above. Using 'best evidence synthesis' they identified successful programmes which included those identified above but added some new ones as well. These include the Milwaukee Project, The Carolina Abecedarian Project, the Family Development Research Programme, and the Parent-Child Development Centre. From this large list of research studies, including many aimed at very young children, Slavin concluded that high quality early childhood intervention was effective at preparing disadvantaged children for school entry. In addition he found that the more successful programmes were interventions that combined several 'strands' of intervention, involved intensive participation by children and families and lasted for a substantial number of years. It was particularly important to carry out the intervention close to school entry, or, for interventions aimed at very young children, to add a 'top-up' near to school entry.

The most carefully controlled of all USA research was the Perry Preschool Project, later called High/Scope. This curriculum is based on Piagetian theory, but also includes intensive parent participation. The programme has been subjected to careful evaluation for almost 30 years and has consistently shown striking social and economic benefits (Berrueta-Clement, Schweinhart, Barnett, Epstein, & Weikart 1984; Schweinhart, Barnes & Weikart 1993). The study is one of the few pre-school evaluations following an experimental design with random assignment of children to the 'treatment' (i.e. early childhood education) or 'control' (i.e. home) groups. The results showed an initial IQ advantage for pre-school graduates which disappeared by secondary school. The High/Scope evaluators widened their outcome measures to include social and economic behaviours in adulthood. They found startling differences in social adjustment, community participation, and crime between the individuals who attended the programme as pre-schoolers and the control group who had remained at home.

Results from a follow-up at age 27 show that the High/Scope programme intended for disadvantaged young children led to better academic performance, adult employment, and to fewer arrests for criminal activity. See Figure 1. This broad range of positive outcomes is confirmed in other research, especially with regard to crime and delinquency, by Larry, Mangione and Honig (1988) who found that pre-school attendance lowered the rate of anti-social behaviour.

Schweinhart Barnes & Weikart (1993) carried out a cost-benefit analysis of the High/Scope programme and found that for every $1000 that was invested in the pre-school programme, at least $7160 (after adjustment for inflation) had been returned to society. These calculations were based on the financial cost to society of crime, special education, income support, and joblessness - set against the running costs of an excellent pre-school programme. The economic analysis also estimated the return to society of taxes from the higher paid individuals who had attended pre-school centres.

There have been two other cost benefit analyses carried out on pre-school interventions, both in the USA. Barnett and Escobar (1990) present data from a pre-school language intervention curriculum studied by Weiss and a comprehensive early day care programme for disadvantaged families studied by Seitz. Both studies showed that the costs of the early childhood programmes were more than offset by the savings later on in the children's schooling and medical care.

It is clear that some, but certainly not all, early childhood programmes lead to improved school adjustment, better jobs and lower rates of anti-social behaviour. In a later study, Schweinhart, Weikart and Larner (1986) compared the effects of three different curricula: High/Scope (the 'active learning' curriculum used in the Perry Preschool project) , Formal Skills (direct instruction) and Traditional Nursery (curriculum centred on free play). In this second High/Scope study they made a direct comparison between the effects of difficult types of curriculum. At school entry, they found that children from all three programmes had increased IQ's. However, follow-up at the age of 15 showed that children who had attended the formal programme had higher rates of anti-social behaviour and had poorer adjustment to school than those who attended the two programmes based on active learning and play. Only the children who experienced informal learning before school retained the advantage of their early education, an advantage they demonstrated by pro-social behaviour and higher confidence when interviewed as adolescents.

A later follow up of the same cohort at age 23 (Schweinhart & Weikart 1997) investigated the impact of the three different curricula on adult social and economic outcomes in adulthood. The individuals who had participated in the formal, Direct Instruction programme had poor psychological adjustment in the community and poorer grades throughout their secondary school careers. By the age of 23 the graduates of High/Scope and the Traditional Nursery programmes were better off in important ways compared to those whose pre-school education was formal in the Direct Instruction group. Those who had experienced the Direct Instruction programme had been arrested more often (over the lifetime), both felony and misdemeanour, more years of special education, and less adult involvement in community activities. More of the graduates of the informal programmes (High/Scope and Traditional Nursery) were living with a spouse and had fewer suspensions from work for discipline problems. Intriguingly, in-depth interviews revealed that the High/Scope graduates reported significantly fewer instances of 'daily irritation'. They were particularly less likely to report that friends or family were 'giving them a hard time', suggesting a more positive view of their immediate social environment. Thus many children who had experienced a formal, instruction-orientated programme before entering school grew up to be more hostile to authority and also towards their family and peers. This 1997 High/Scope study gives confidence in the results of the first (Schweinhart, Barnes & Weikart 1993) since it too used experimental methods and similar analytic strategies.

The National Institute of Child Health and Development (1997) is currently carrying out a longitudinal study on the effects of day care on children's development between 0 and 8 years. These researchers are using methods similar to those of Weikart and colleagues (McCartney & Jordan 1990) but early results relate more to care in the age range 0-3 years than to early childhood education.

A direct replication of Schweinhart and Weikart (1997) was carried out in Portugal (Nabuco 1997; Nabuco & Sylva 1995). Nabuco investigated the effects of the three approaches to pre-school curriculum on children's academic and social development at the start and end of first grade in the Lisbon area. The pre-school curricula included High/Scope, a Formal Skills curriculum and a Progressive Nursery programme, all similar to those studied by Schweinhart and Weikart (1997). Each curriculum was represented by five pre-school centres in Portugal, all chosen as "good examples of the curricular model". When children transferred at age 6 to primary school, control children with no experience of preschool were recruited from the same first-grade classes. In this design, children's academic and social progress over the first year in school was measured by comparing control children (classmates) who had not attended pre-school with children who had attended pre-school centres implementing different curricula. Children were not randomly assigned to pre-school programmes so careful matching of children and families was carried out.

The results of this short-term longitudinal study are in complete agreement with those of Schweinhart and Weikart (1997). Children who had attended the High/Scope programme while in pre-school showed significantly higher educational attainment (reading and writing), higher self-esteem, and lower anxiety than matched control children. When compared to children in the Formal Skills group, the High/Scope children performed better on literacy tests, better on self esteem and showed significantly less anxiety than children from the Formal Skills group. When compared with the children in the Traditional Nursery, the High/Scope children showed better outcomes, although their superiority was comparatively less than in comparison with the Formal Skills group.

Research on the effects of Early Education in the UK

There has been little large-scale, systematic research on the effects of early childhood education. One exception was the Child Health Education Study which showed that children with some form of pre-school education had better outcomes (Osborn & Milbank 1987). The 'Start Right' Enquiry (Ball 1994) reviewed the evidence of this research and concluded that small-scale studies suggested a positive impact but that large-scale research was inconclusive. They recommended longitudinal studies with baseline measures so that the 'value added' by pre-school education could be established.

Other evidence has been provided concerning the influence of different pre-school environments on children's development (Melhuish et al. 1990; Melhuish 1993; Sylva & Wiltshire 1993; Borge et al., 1993). Some researchers have examined the impact of particular characteristics, e.g. gender and attendance on children's adjustment to nursery classes (Davies & Brember 1992), or adopted cross-sectional designs to explore the impact of different types of pre-school provision (Davies & Brember 1997). Feinstein, Robertson and Symons (1998) attempted to evaluate the effects of pre-schooling on children's subsequent progress. This is an ambitious aim and one which was not the prime purpose of the two data sets used in the analyses. There are strong arguments against using birth cohort designs for the study of the influence of pre-schooling. The absence of data about children's attainments at entry to pre-school means that neither the Birth Cohort Study (1970) nor the National Child Development Study (1958) can be used to explore progress over the pre-school period, the period in which they are most likely to be identified. Moreover, for the NCDS the absence of data age age 5 (i.e. near entry to school) is an additional limitation. To date, however, no research using multilevel models (Goldstein 1987) has been used to investigate the impact of both type of provision **and** individual centre effects. Thus little research in the UK has explored whether some forms of provision have greater benefits than others. Schagen (1994) attempted multilevel modelling but did not have adequate control at entry to pre-school.

Research into the effects of pre-school education will benefit from longitudinal designs which allow the separation of pre-school influences from those related to the individual child's personal and family characteristics. New research should identify the educational processes, including pedagogy, which are associated with positive effects as children progress and develop. It should also explore the mechanisms of change (Sylva 1994).

In the UK there is a long tradition of variation in pre-school provision both between types (e.g. playgroup, local authority or private nursery or nursery classes) and in different parts of the country reflecting Local Authority emphasis and funding and geographical conditions (e.g. urban or rural). A series of reports (House of Commons Select Committee 1989; DES Rumbold Report 1990; Ball 1994) have questioned whether Britain's pre-school education is as effective as it might be and have called for both better co-ordination of services along with research into the impact of different forms of provision (Siraj-Blatchford 1995).

RESEARCH METHODS

EPPE IN OVERVIEW

The Effective Provision of Pre-school Education (EPPE) project is a major five year study funded by the UK's Department for Education and Employment (DfEE). Research began in 1997 to investigate three issues which have important implications for policy and practice:

- the effects on children of different types of pre-school provision,
- the structural (e.g. adult-child ratios) and process characteristics (e.g. interaction styles) of more effective pre-school centres, and
- the interaction between child and family characteristics and the kind of pre-school provision a child experiences.

A 'school effectiveness' research design was chosen to investigate these topics because this enables the research team to investigate the progress and development of individual children (including the impact of personal, socio-economic and family characteristics), and the effect of individual pre-school centres on children's outcomes at both entry to school (the start of Reception) and at the end of Key Stage 1 (age 7 plus). Such research designs are well suited to the questions addressed by social and educational researchers with an institutional focus (Paterson & Goldstein 1991). The growing field of school effectiveness research has developed an appropriate methodology for the separation of intake and school influences on children's progress using so called 'value added' multilevel models (Goldstein 1987, 1995). As yet, such techniques have not been applied to the pre-school sector, although recent examples of value added research for younger ages at the primary level have been provided (Tymms et al. 1997; Sammons & Smees 1998; Jesson et al. 1997; Strand 1997; and Yang & Goldstein 1997). These have examined the relationship between baseline assessment at reception to infant school through to Key Stage 1 (age 7 plus years).

The earliest studies of school effectiveness can be summarised as addressing the question *"Does the particular school attended by a child make a difference?"* (Mortimore et al. 1988; Tizard et al. 1988). More recently the question of internal variations in effectiveness, teacher/class level variations and stability in effects of particular schools over time have assumed importance (Luyten 1994; 1995; Hill & Rowe 1996). As yet research has not attempted to examine the impact of individual pre-school centres using multilevel analysis. The EPPE project is designed to examine both the impact of type of pre-school provision as well as allow the identification of particular pre-school characteristics which have long term effects. It is also designed to establish whether there are differences in the effects of individual pre-school centres on children's progress and development. In addition, the project is exploring the impact of pre-school provision for different groups of children and the extent to which pre-schools are effective in promoting different kinds of outcomes (cognitive and social/behavioural).

The 8 aims of the EPPE Project

- To produce a detailed description of the 'career paths' of a large sample of children and their families between entry into pre-school education and completion (or near completion) of Key Stage 1.

- To compare and contrast the developmental progress of 3,000+ children from a wide range of social and cultural background who have differing pre-school experiences including early entry to Reception from home.

- To separate out the effects of pre-school experience from the effects of education in the period between Reception and Year 2.

- To establish whether some pre-school centres are more effective than others in promoting children's cognitive and social/emotional development during the pre-school years (ages 3-5) and the beginning of primary education (5-7 years).

- To discover the individual characteristics (structural and process) of pre-school education in those centres found to be most effective.

- To investigate differences in the progress of different groups of children, e.g. second language learners of English, children from disadvantaged backgrounds and both genders.

- To investigate the medium-term effects of pre-school education on educational performance at Key Stage 1 in a way which will allow the possibility of longitudinal follow-up at later ages to establish long-term effects, if any.

- To relate the use of pre-school provision to parental labour market participation.

The sample: regions, centres and children

Since the focus of the EPPE study is on the effectiveness of pre-school centres, a birth cohort sample would be inappropriate (insufficient numbers of children attending any one centre would be recruited and, if the sample were random, too few children would be included from certain types of provision). In order to maximise the likelihood of identifying both centre and any type of provision effects, the EPPE sample was stratified by type of centre and geographical location.

- Six English Local Authorities (LAs) in five regions participate in the research. These were chosen to cover provision in urban, suburban and rural areas and a range of ethnic diversity and social disadvantage. (Another related project covering Northern Ireland was instituted in April 1998 [Melhuish et al. 1997].

- Six main types of provision are included in the study (the most common forms of current provision are *playgroups*, local authority or voluntary *day nurseries*, *private day nurseries* and *nursery schools* and *classes*, centres *combining care and education*.

In order to enable comparison of centre and type of provision effects the project was designed to recruit 500 children, 20 in each of 20-25 centres, from the six types of provision, thus giving a total sample of 3000 children and 140 centres[1]. In some LAs certain forms of provision are less common and others more typical. Within each LA, centres of each type were selected by stratified random sampling and, due to the small size of some centres in the project (e.g. rural playgroups), more of these centres were recruited than originally proposed, bringing the sample total to 141 centres and over 3000 children.

In order to examine the impact of no pre-school provision, an additional sample of 200+ children who have had no pre-school experience is being recruited (from September 1997) from the reception classes to which children from the pre-school sample transfer. As with the pre-school sample, the numbers of children who have received no pre-school provision varies in the five regional areas reflecting differences in the amount of provision and access to centres. (It was hoped to have a larger sample of Home children but they were difficult to find.)

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[1] The nursery school and combined centre samples were added later (Siraj-Blatchford, Sylva, Melhuish & Sammons 1997) and their cohorts will be assessed somewhat later; results will be reported separately and in combined form.

Within each pre-school centre children were recruited to the EPPE sample and given a set of baseline assessments within a maximum of ten weeks of entry from the ages of 3 years to 4 years 3 months. Children who had been at a centre before their third birthday were also eligible to be recruited to the study and were assessed as close to their birthdate as possible and within ten weeks. In order to obtain sufficient children for the sample at the centre level, children were recruited to the study over a 15 month period (end 31 March 1998). Signed parental consent letters were received for all children in the study.

The progress and development of 3,000+ pre-school children in the EPPE sample is being followed over four years until the end of Key Stage 1. (See Figure 2.) Two complicating factors are that a substantial proportion of children have moved from one form of pre-school provision to another (e.g. from playgroup to nursery class) and some will attend more than one centre in a week. For example, a child might spend each morning at nursery class and perhaps two or three sessions at playgroup. Careful records are necessary in order to examine issues of stability and continuity, and to document the range of pre-school experiences to which individual children can be exposed. Mobile children are assessed at exit from any one centre so that separate analyses of this group can be conducted.

Details about length of sessions, number of sessions normally attended per week and child attendance are collected to enable the amount of pre-school education to be quantified for each child in the sample.

Child assessments

Four common points of assessment are being used.

Entry to Pre-school *(age 3.0 to 4 years 3 months)*

Name of Assessment	Assessment Content	Administered by:
British Ability Scales Second Edition (BASII) (Elliot et al. 1996):	Cognitive development battery	
• Block Building	• Spatial skills	EPPE Researcher
• Verbal Comprehension	• Verbal skills	EPPE Researcher
• Picture Similarity	• Pictorial reasoning skills	EPPE Researcher
• Naming Vocabulary	• Verbal skills	EPPE Researcher
Adaptive Social Behavioural Inventory (ASBI) (Hogan et al. 1992)	Social behaviour and emotional adjustment	Centre Staff
Children not fluent in English: Assessed only on the non-verbal BAS II scales (Block Building and Picture Similarity) and social and emotional behaviour.		

These assessments were chosen to provide a baseline against which later progress and development can be compared. The British Ability Scales (BAS subscales) are designed for use with this age range. Research Officers in each region were trained in their use and checked for reliability. They assessed children on a one-to-one basis. Where possible an interpreter was recruited who spoke the child's home language if the child was not fluent in English. Centre staff who were familiar with the child completed an Adaptive Social Behaviour Inventory (ASBI) for each sample child to provide a measure of social and behavioural development.

Entry to reception class *(age rising 5 years)*

All children were assessed at entry to school, these assessments provide both a measure of current attainment and development at exit from pre-school and serve as a baseline for entry to school. The assessments were chosen to be compatible with the Desirable Outcomes for Pre-School Education (DfEE 1996).

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All sample children were assessed on

Name of Assessment	Assessment Content	Administered by:
British Ability Scales Second Edition (BASII) (Elliot et al. 1996):	Cognitive development battery	
• Verbal Comprehension	• Verbal skills	EPPE Researcher
• Picture Similarity	• Pictorial reasoning skills	EPPE Researcher
• Naming Vocabulary	• Verbal skills	EPPE Researcher
• Pattern Construction	• Spatial skills	EPPE Researcher
BAS Early Number Concepts	Reasoning ability	EPPE Researcher
Letter Recognition	Lower case letters	EPPE Researcher
Phonological Awareness (Bryant and Bradley 1985)	Rhyme and Alliteration	EPPE Researcher
Adaptive Social Behavioural Inventory (ASBI - R) (Hogan et al. 1992)	Social and emotional behaviour, hyperactivity and settling-into-school	Class Teacher
Children not fluent in English: Assessed only on two of the non-verbal BAS II scales (Picture Similarity and Pattern Construction) and social behaviour. In addition they were assessed on BAS II Copying, a measure of spatial ability, (Elliot et al. 1996), which was also administered by the EPPE researcher		

The ASBI was also adapted and extended by the EPPE team to cover a greater range of behaviours considered appropriate for school age children by incorporating selected additional items from other published tests, covering hyperactivity and prosocial behaviour.

Exit from reception class *(sub-scale sample of 1,000+ children including all Home Children)*

The sample children were/are assessed on

Name of Assessment	Assessment Content	Administered by:
British Ability Scales Second Edition (BASII) (Elliot et al. 1996):		
• Early Number Concepts	• Reasoning	EPPE Researcher
• Word Reading	• Reading single words	EPPE Researcher
Letter Recognition	Lower case letters	EPPE Researcher
Phonological Awareness (Bryant and Bradley 1985)	Rhyme and alliteration	EPPE Researcher
Dictation Test (Clay 1985)	Phonological approximation to written words	EPPE Researcher
Adaptive Social Behavioural Inventory - Revised (ASBI - R) (Hogan et al. 1992)	Social emotional adjustment behaviour, hyperactivity and settling-into-school	Class Teacher
Children not fluent in English: Assessed only on the non-verbal BAS II scale (Early Number Concepts and Copying) and social behaviour		

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Outcome measures at age 6 plus include

Name of Assessment	**Assessment Content**	**Administered by:**
Primary Reading: Level 1 (NFER-Nelson)		Class Teacher
Maths 6 (NFER-Nelson)		Class Teacher
Strengths and Difficulties Questionnaire (Goodman 1997) for extended study	Hyperactivity, conduct problems, peer problems, emotional problems and prosocial	Class Teacher

Outcome measures at age 7 plus include

Name of Assessment	**Assessment Content**	**Administered by:**
Primary Reading: Level 1, and possible Level 2 (NFER-Nelson)		Class Teacher
Basic Mathematics (NFER-Nelson)		Class Teacher
Strengths and Difficulties Questionnaire (Goodman 1997) extended for study	Hyperactivity, conduct problems, peer problems, emotional problems and pro-social	Class Teacher
Attitudes to School Questionnaire	Children's views on academic and social activities	Completed by child
Record of conduct / emotional problems		From school records
National Assessments	Reading, Writing and Maths: National Assessments Science: teacher assessed	From school records

Measuring child/family characteristics known to have an impact on children's development

Educational and sociological research has provided much evidence of the important impact of personal, social and family background on educational progress (see reviews by Hutchison et al. 1979; Mortimore & Blackstone 1982; Sammons et al. 1983). Melhuish (1994) has indicated that parental involvement, which is recognised to contribute to school success (Topping 1992), can be influenced by pre-school practices.

Parent interviews were administered to provide detailed information about parent education, occupation and employment history, family structure and attendance history. In addition, details about the child's day care history and health problems, and parental attitudes and involvement in educational activities (e.g. reading to child, teaching nursery rhymes, television viewing etc) have been collected.

Pre-School Characteristics and Processes

Regional Field Officers made regular visits to pre-school centres, maintained notes about each centre and observed staff. Information about centre characteristics is also obtained by means of interviews with centre directors. Aspects covered include: group size, child staff ratio, staff

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training, aims, policies, curriculum, parental involvement. Regional officers liaised in each authority with a Regional Coordinator, a senior officer with responsibility for Early Years, and these individuals helped gain cooperation of centres.

Process quality characteristics include the day-to-day functioning within settings (e.g. child-staff interaction, child-child interaction, and structuring of children's activities). Previous research has shown these variables to influence children's development (Melhuish 1993; Petrogiannis & Melhuish 1996). Information about process quality characteristics is being obtained by means of the Early Childhood Environment Rating Scale (ECERS) which has been recently adapted (Harms, Clifford & Cryer 1998) and the Caregiver Interaction Scale (Arnett 1989). All Field Officers have been trained and checked for reliability in administering these instruments. The ECERS include the following sub-scales:

- Space and furnishings
- Personal care routines
- Language and reasoning
- Activities
- Interaction
- Programme structure
- Parents and staffing.

Sylva, Siraj-Blatchford, Taggart & Colman (unpublished) have developed four additional ECERS sub-scales covering educational quality in terms of: Language, Mathematics, Science and Environment, and Diversity. Using the four additional sub-scales centres are rated on 11 subscales altogether.

Case Studies

In addition to the range of quantitative data collected about children, their families and their pre-school centres, detailed qualitative data will be collected using case studies of several outlier pre-school centres (chosen retrospectively on the basis on the multilevel analyses of intake and outcome measures covering the period baseline to entry into reception).

The methodology of the EPPE project is thus mixed. These detailed case studies will use a variety of methods of data gathering, including documentary analysis, interviews and observations and the results will help to illuminate the characteristics of more successful pre-school centres and assist in the generation of guidance on good practice. Particular attention will be paid to parent involvement, teaching and learning processes, child-adult interaction and social factors in learning. Inevitably there are difficulties associated with the retrospective study of process characteristics of centres identified as more or less effective after children in the EPPE sample have transferred to school and it will be important to examine field notes and pre-school centre histories to establish the extent of change during the study period.

ANALYTIC STRATEGY

The EPPE research was designed to enable the linking of three sets of data: information about children's attainment and development (at different points in time), information about children's personal, social and family characteristics (e.g. age, gender, SES etc), and information about pre-school experience (type of centre and its characteristics).

Identifying individual centre effects and type of provision at entry to school

Longitudinal research is essential to enable the impact of child characteristics (personal, social and family) to be disentangled from any influence related to the particular pre-school centre attended. Multilevel models take account of the clustered nature of the child sample, children being nested within centres and centres within local authority areas. The first phase of the analysis will adopt these three levels in models which attempt to identify any centre effects at entry to reception.

Given the disparate nature of children's pre-school experience it is vital to ensure that the influences of age at assessment, amount and length of pre-school experience and pre-school attendance record are investigated. This information is also important in its own right to provide a detailed description of the range of pre-school provision experienced by different children and any differences in the patterns of provision used by specific groups of children/parents and their relationship to parents' labour market participation. Predictor variables for attainment at entry to reception will include prior attainment (British Ability Scales (BAS) sub scales), Adaptive Social Behavior Inventory (ASBI) score, and child characteristics (personal, social and family). The need to adjust for measurement error in explanatory variables (e.g. baseline assessments) has been illustrated by Woodhouse et al. (1996). The BAS subscales have published reliability estimates ranging between 0.82 (Picture Similarities) to 0.89 (Block Building). The EPPE multilevel analyses will seek to incorporate adjustment for measurement error and to examine differences in the performance of different groups of children at entry to pre-school and again at entry to reception classes. The extent to which any differences increase/decrease over this period will be explored. This will enable equity issues to be addressed.

After controlling for intake differences, residual estimates of the impact of individual pre-school centres (with their associated confidence limits) will be used to select approximately 12 outlier centres from the 141 in the project for detailed case studies. In addition, the proportion of i) total and ii) unexplained variance in children's performance in the various assessments conducted at entry to reception classes attributable to the centre level will be calculated in models with and without control for child intake characteristics (prior attainment and personal, social and family characteristics). (See the appendix).

In addition, multilevel models will be used to test out the relationship between particular process quality characteristics of centres and children's cognitive and social/behavioural outcomes at the end of the pre-school period (entry to school). The extent to which it is possible to explain (statistically) the variation in children's scores on the various measures assessed at entry to reception classes will provide evidence about whether particular forms of provision have greater benefits in promoting such outcomes by the end of the pre-school period. Multilevel analyses designed to test out the impact of quantitative measures of pre-school process characteristics, such as the scores on various ECERS scales and measures derived from the Pre-School Centre Director's interviews, will provide evidence of which measures are associated with better outcomes (cognitive and social/behavioural) at rising five. Through this we hope they will contribute to the development of current thinking about the characteristics of effective pre-school provision (e.g. as outlined in Ball 1994).

Identifying continuing effects of pre-school centres at KS1

Cross-classified multilevel models have been used to examine the long term effects of primary schools on later secondary performance (Goldstein & Sammons 1997). In the EPPE project it is planned to use such models to explore the possible mid-term effects of pre-school provision on later progress and attainment at primary school (age 7). (See appendix) The use of cross classified methods explicitly acknowledges that children's educational experiences are complex and that over time different institutions may influence cognitive and social/behavioural

18

development for better or worse. Cross-classified models will be used to partition the variance in the selected measures of children's educational outcomes at age seven between pre-school and primary school components. This will allow the relative strength of any continuing effects of individual pre-school centre membership to be ascertained, in comparison with the primary school influence. These models will examine the extent to which pre-school centres have any continuing impact on pupil attainment at age 7, after controlling for children's performance in relevant assessments at entry to reception (rising 5). Hill & Goldstein (1997) have developed a method for analysing educational data sets where there is missing data concerning the units (e.g. school) to which a particular student belongs. Such approaches may be relevant to the EPPE study where child mobility between pre-school centres can be high.

THE LINKED STUDY IN NORTHERN IRELAND 1998-2003

The Effective Pre-school Provision in Northern Ireland (EPPNI) is part of EPPE and is under the directorship of Professor Melhuish, Professor Kathy Sylva, Dr. Pam Sammons, and Dr. Iram Siraj-Blatchford. The study explores the characteristics of different kinds of early years provision and examines children's development in pre-school, and influences on their later adjustment and progress at primary school up to age 7 years. It will help to identify the aspects of pre-school provision which have a positive impact on children's attainment, progress, and development, and so provide guidance on good practice. The research involves 70 pre-school centres randomly selected throughout Nothern Ireland. The study investigates all main types of pre-school provision attended by 3 to 4 year olds in Northern Ireland: playgroups, day nurseries, nursery classes, nursery schools and reception groups and classes.

SUMMARY

The EPPE project breaks new ground in its methodology for investigating the influence of pre-school provision on children's subsequent progress and development. The use of mixed methods (both multilevel quantitative techniques and qualitative case studies) should prove more fruitful for policy makers and practitioners than reliance on only one form of data gathering and analysis.

The project seeks to provide important new descriptive information about the use of different types of pre-school provision in a range of geographical and socio-economic contexts. It is intended to examine in particular the relationship between children's personal, social and family characteristics and patterns of pre-school use and to investigate children's pre-school 'career paths' from three to entry to primary school and through to the end of Key Stage 1.

An 'educational effectiveness' design was chosen to enable modelling of the complicated effects of amount and type of pre-school provision (including attendance) experienced by children and their personal, social and family characteristics on subsequent progress and development. Measures of both cognitive and social/behavioural outcomes are being studied. Due to the focus on measuring children's verbal and numerical skills from age three onwards, the research should help to inform current debates about how to raise literacy and numeracy standards, as well as illuminating the relationship between cognitive and social/behavioural development at different ages. The use of multilevel models for the analysis will enable the impact of both type of provision and individual centres on children's pre-school outcomes (at age 5 and later at age 7) to be investigated. Moreover, the relationships between measures of pre-school centre processes and children's progress and development will be explored. The results of these analyses and the findings from the qualitative case studies of selected centres will help to inform both policy and practice.

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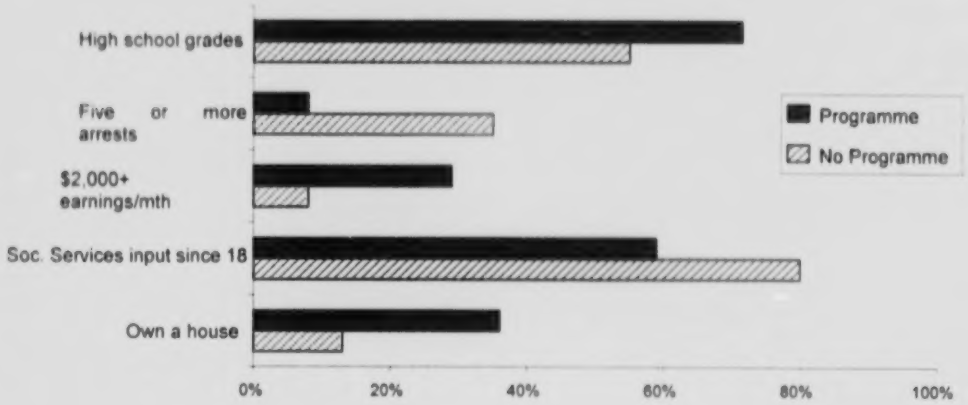
Figure 1

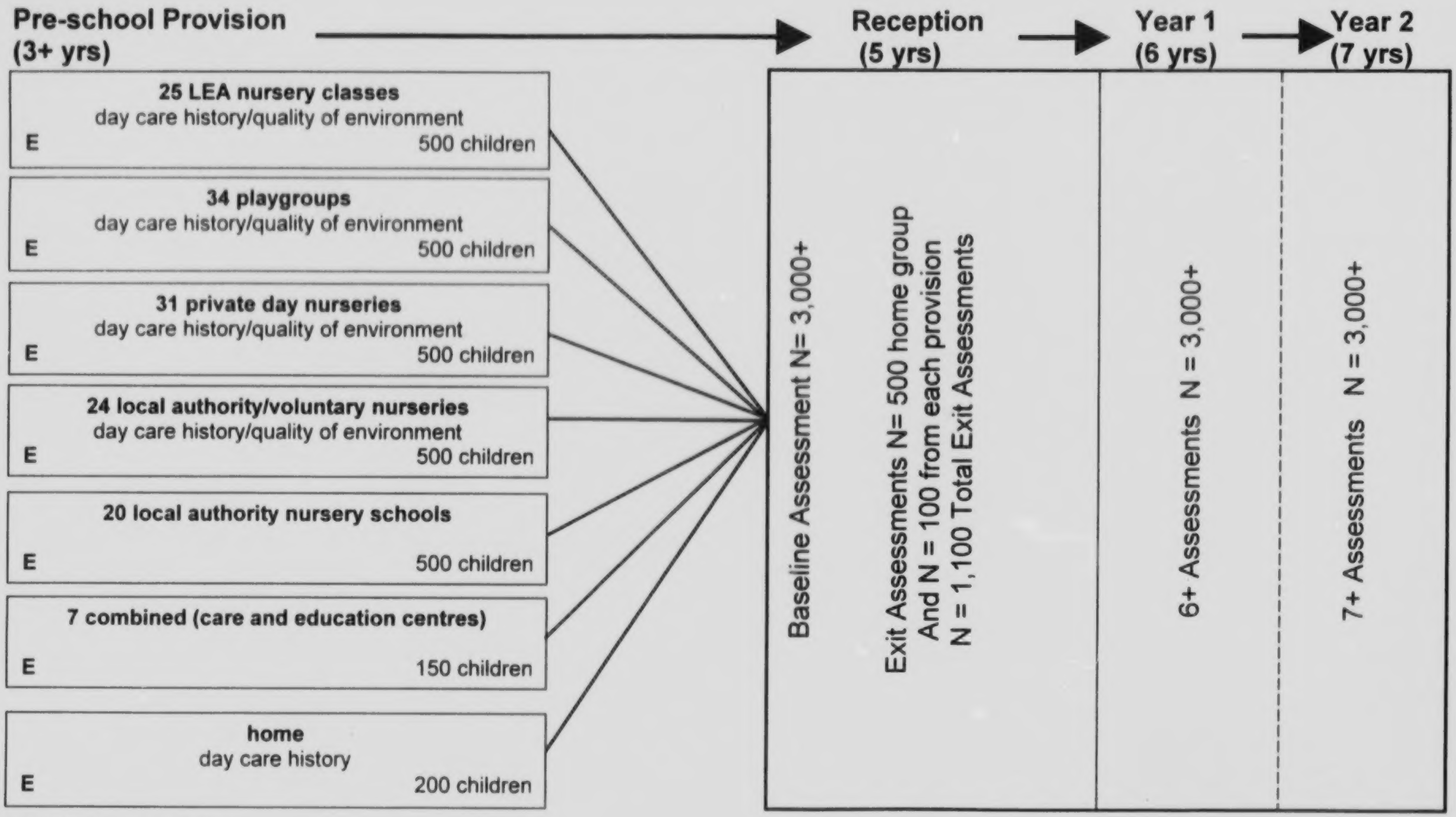
Perry Preschool (High/Scope) Outcomes



(Schweinhart, Bames & Weikart, 1993)

Figure 2

Plan of Study


Pre-school Provision
(3+ yrs)
Reception
(5 yrs)
Year 1
(6 yrs)
Year 2
(7 yrs)
25 LEA nursery classes
day care history/quality of environment
E
500 children
34 playgroups
day care history/quality of environment
E
500 children
31 private day nurseries
day care history/quality of environment
E
500 children
24 local authority/voluntary nurseries
day care history/quality of environment
E
500 children
20 local authority nursery schools
E
500 children
7 combined (care and education centres)
E
150 children
home
day care history
E
200 children
Baseline Assessment N= 3,000+
Exit Assessments N= 500 home group
And N = 100 from each provision
N = 1,100 Total Exit Assessments
6+ Assessments N = 3,000+
7+ Assessments N = 3,000+

E *Entry Assessment*

APPENDIX

MULTILEVEL METHODOLOGY

"In order to describe the complex reality that constitutes educational systems we require modelling tools that involve a comparable level of complexity. I also wish to argue that, while we need continually to elaborate our models, we will almost certainly remain a long way from perfect descriptions; the journey is important, even though we may never arrive at our destination" (Goldstein, 1998, p.2).

Many social systems, education in particular, typically have a hierarchical organisation in which units (e.g. pupils) at one level are grouped within units at the next higher level (e.g. classes), which are themselves grouped together (e.g. schools) to form another level of aggregation. This gives three levels the lowest (level 1) being that of the pupil: level 2 being that of the classroom: level 3 that of the school. If we are interested in the factors which influence students' educational outcomes (e.g. examination performance) then it will be important to include the characteristics of the pupils themselves (e.g. sex, age, prior attainment) and information about their classes (e.g. teacher interactions, grouping strategies etc) and their schools (e.g. policies, school type etc.).

Multilevel analyses utilise regression techniques which explicitly take account of the hierarchical structure of data (the fact that pupils are grouped into specific classes, and classes into schools). The issue of appropriate and valid ways of measuring and reporting on schools' performance (as measured by pupils' examination or test results or other outcomes such as attendance or attitudes) and the construction of performance indications has become increasingly relevant due to the policy of publishing 'league tables' of schools on examinations results. Academic interest in the fields of school effectiveness and improvement has expanded rapidly during the last two decades. Methodological advances, particularly the availability of the appropriate statistical software for the analysis of multilevel data using models such as the ESRCs Multilevel Models Project enable more efficient estimates of school differences in pupil achievement (especially of the value added or progress made over time) to be obtained.

Goldstein (1987) provides a detailed description of multilevel models in educational and social research and Paterson & Goldstein (1991) provide a useful summary of this approach. The method allows the calculation of estimates of schools' effects upon pupils' educational outcomes after controlling for the impact of relevant pupil background characteristics (e.g. sex, age, social class,low income) and of prior attainment. There is now substantial academic agreement concerning the need to employ multilevel methods to enable efficient estimation of class and school-level effects and the kinds of data required for valid comparisons to be made.

An educational effectiveness research design and multilevel methods were selected for the EPPE study due to its focus on the effects of pre-school type and of individual pre-school centres.

More recent developments of multilevel methodology (Goldstein, 1995) include the development of cross classified models. Such models would be essential to allow the simultaneous analysis of pre-school and primary (infant) school effects on achievement at Key Stage 1. Cross classified models would allow the simultaneous estimation of the separate and joint effects of pre-school and primary school attended whilst controlling for relevant child-level to personal and family characteristics.

Cross-classified multilevel analyses will be used to analyse data where units (i.e. children) can be classified along more than one dimension - for example, by both pre-school and by later primary school attended (see Goldstein, 1995). The figure below illustrates a random cross-classification at level 2.

Example of children cross-classified by pre-school and primary school centre

	Primary School 1	Primary School 2	Primary School 3	Primary School 4
Pre-school centre 1	XX	XXXX		XXX
Pre-school centre 2	X	X	X	
Pre-school centre 3	XX	X		XX
Pre-school centre 4	XX	XX	XX	XX

The basic cross classified model

$$y_{ij1j2} = \sum \beta_k x_{kij} + u_{j1} + u_{j2} + e_{ij}$$

$$var(u_{j1}) = \sigma^2_{u1}, \quad var(u_{j2}) = \sigma^2_{u2}, \quad var(_{ij}) = \sigma^2_{e}$$

Thus the total level 2 variance is the sum of a between pre-school centre and a between primary school variance.

Where: At level 2 subscript 1 refers to pre-school centre
At level 2 subscript 2 refers to primary school

y_{ij1j2} The primary school response variable e.g. a child's score on an outcome measure (e.g. reading test result) at age 7 (end of Key Stage 1).

x_{kij} A pre-school predictor variable e.g. child's BAS score at entry to reception.

In addition process variables related to the characteristics of pre-school provision would be tested using such models to establish which characteristics of pre-school education account for variation in children's subsequent attainment.

Goldstein, H. (1998) Models for reality: new approaches to the understanding of educational processes. A Professional Lecture, London: Institute of Education, University of London.

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The Effective Provision of Pre-School Education (EPPE) Project

Technical Paper 2

Characteristics of the EPPE Project Sample at Entry to the Study

PS 028277

A Longitudinal Study funded by the DfEE
1997-2003

Technical Paper 2

CHARACTERISTICS OF THE EPPE PROJECT SAMPLE AT ENTRY TO THE STUDY

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Contents

Page Number

Overview of the Project 1-11

Executive Summary i -iv

Introduction 1

Section One 1

The EPPE Sample 1

Pre-School Experience 3

Child Baseline Assessments 5

Age and BAS Scores 6

Gender and BAS scores 9

Ethnic Group and BAS Scores 10

Type of Pre-School Provision 11

Age at Entry to Pre-School 12

Children's Social and Behavioural Development 13

Age and ASBI factor scores 16

Links between BAS and ASBI Measures at Entry 17

Gender and Ethnic Differences in Social and Behavioural Development 18

Summary 18

Section Two 18

Family characteristics 19

Parents' Age Group 20

Parents' Education and Qualifications 20

Parents' Occupations 21

Type of Pre-school and Socio-Economic Background 23

Choice of Pre-School Centre 27

Summary 28

Section Three 29

The Role of Multilevel Models 29

Results : Overall Cognitive Attainment 29

Pre-School Centre Differences 30

Child Characteristics 30

Amount of Pre-School Experienced 33

Home Environment 34

Parent Characteristics 36

Parent and Child Characteristics 39

The Final Model – Parent, Child and Home Environment 40
  Child Characterisitcs 40
  Home Environment 40
  Parents 40
  Amount of Pre-School Experience 41
  Type of Pre-School 41
Summary and Conclusions 41
Note 1 : Variables tested in combined multilevel model 44
References 45

Appendix 1- Patterns of participation in pre-school provision by ethnic group 46
Appendix 2.1 – The Full Contexualised Model:Total BAS Score at Entry 47
Appendix 2.2 – The Full Contexualised Model: Non-Verbal Score at Entry 49

Tables

Page Number

Section One

Table 1.1 : Distribution of the EPPE sample at entry 2
Table 1.2 : Pre-School experience of EPPE sample 3
Table 1.3 : Variation in amount of provision by type of pre-school centre 4
Table 1.4 : Numbers of EPPE children at the centre level 5
Table 1.5 : Age in months when BAS first administered 6
Table 1.6 : Correlations between child's age in months at BAS entry assessment and scores in the BAS assessments 7
Table 1.7 : Example of variation in the mean BAS scores by age in months 7
Table 1.8 : Variation in children's BAS assessments at entry to EPPE study 8
Table 1.9 : BAS scores at entry analysed by gender 9
Table 1.10 : BAS scores at entry analysed by ethnic group 10
Table 1.11 : Variation between Centres in number of EPPE children, mean BAS scores and mean age by type of pre-school provision 11
Table 1.12 : Variation in children's age at entry to target pre-school centre 12
Table 1.13 : Children's scores on selected ASBI items at entry to the study 14
Table 1.14 : Factor loadings of ASBI items at entry to EPPE study 15
Table 1.15 : Children's factor scores at entry to EPPE study 16
Table 1.16 : Correlations between children's social, behavioural and cognitive attainments at entry to the EPPE study 17
Table 1.17 : ASBI factor scores at entry analysed by gender 18

Section Two

Table 2.1 : Children's family structure 19
Table 2.2 : Number of siblings 19
Table 2.3 : Parents' marital status 19
Table 2.4 : Parents' age group 20
Table 2.5 : Parents' age on leaving full time education 20
Table 2.6 : Parents' qualification levels 21
Table 2.7 : Parents' current employment status 21
Table 2.8 : Mother's reason for not working 22
Table 2.9 : Parents' occupational status 22
Table 2.10 : Mothers' qualifications by type of pre-school centre 23
Table 2.11 : Parents' current employment status by type of pre-school provision 24
Table 2.12 : Social class of parents' current or last occupation by type of pre-school provision 25

Table 2.13 : Mean raw BAS scores at entry by mothers' qualification level 26
Table 2.14 : Mean raw BAS scores at entry by mothers' occupational level 26
Table 2.15 : Mean raw BAS scores at entry by mothers' marital status 27
Table 2.16 : Reasons given for choosing their child's pre-school centre 28

Section Three

Table 3.1 : Variation in Children's total BAS scores at entry to the EPPE study (Null Model) 30
Table 3.2 : Percentage of variance in total BAS scores accounted for by specific measures tested individually and intra centre correlation (Child Variables) 30
Table 3.3 : Results of the multilevel analyses of child characteristics 32
Table 3.4 : Variation in children's total BAS scores at entry to EPPE study (Child Model) 32
Table 3.5 : Variation in children's total BAS scores at entry to EPPE study (Pre-School Experience Model) 33
Table 3.6 : Percentage of variance in total BAS scores accounted for by specific measures tested individually and intra centre correlations (Home Environment Variables) 34
Table 3.7 : Results of the multilevel analyses of Home Environment Characteristics 35
Table 3.8 : Variation in children's total BAS scores at entry to EPPE study (Home Environment Model) 35
Table 3.9 : Percentage of variance in total BAS scores accounted or by specific measures tested individually and intra centre correlations (Parent Variables) 36
Table 3.10 : Results of the Multilevel analyses of parent characteristics 37
Table 3.11 : Variation in children's total BAS scores at entry to EPPE study (Parent Model) 38
Table 3.12 : Results of multilevel analyses of parent and child variables 39
Table 3.13 : Variation in children's total BAS scores at entry to EPPE study (Parent and Child Model) 39
Table 3.14 : Variation in children's total BAS scores at entry to EPPE study (Final Model) 41
Table 3.15 : Contextualised multilevel analaysis of total BAS scores comparison of different Models 42

Effective Provision of Pre-school Education

"EPPE"

Overview of the Project

This series of 12 reports describes the research on effective pre-school provision funded by the UK Department for Education & Employment (DfEE). Further details appear in Technical Paper 1 (Sylva, Sammons, Melhuish, Siraj-Blatchford & Taggart 1999). This longitudinal study assesses the attainment and development of children followed longitudinally between the ages of 3 and 7 years. Three thousand children were recruited to the study over the period January 1997 to April 1999 from 141 pre-school centres. Initially 114 centres from four types of provision were selected for the study but in September 1998 an extension to the main study was implemented to include innovative forms of provision, including 'combined education and care' (Siraj-Blatchford et al. 1997).

Both qualitative and quantitative methods (including multilevel modelling) have been used to explore the effects of individual pre-school centres on children's attainment and social/behavioural development at entry to school and any continuing effects on such outcomes at the end of Key Stage 1 (age 7). In addition to centre effects, the study investigates the contribution to children's development of individual and family characteristics such as gender, ethnicity, language, parental education and employment. This overview describes the research design and discusses a variety of research issues (methodological and practical) in investigating the impact of pre-school provision on children's developmental progress. A parallel study is being carried out in Northern Ireland.

There have been many initiatives intended to improve educational outcomes for young children. Will these initiatives work? Will they enable children to enter school 'more ready' to learn, or achieve more at the end of Key Stage 1? Which are the most effective ways to educate young children? The research project described in this paper is part of the new emphasis on ensuring 'a good start' for children.

PREVIOUS RESEARCH ON THE EFFECTS OF EARLY EDUCATION IN THE UK

There has been little large-scale, systematic research on the effects of early childhood education in the UK. The 'Start Right' Enquiry (Ball 1994; Sylva 1994) reviewed the evidence of British research and concluded that small-scale studies suggested a positive impact but that large-scale research was inconclusive. The Start Right enquiry recommended more rigorous longitudinal studies with baseline measures so that the 'value added' to children's development by pre-school education could be established.

Research evidence elsewhere on the effects of different kinds of pre-school environment on children's development (Melhuish et al. 1990; Melhuish 1993; Sylva & Wiltshire 1993; Schweinhart & Weikart 1997; Borge & Melhuish, 1995; National Institute of Child Health Development 1997) suggests positive outcomes. Some researchers have examined the impact of particular characteristics, e.g. gender and attendance on children's adjustment to nursery classes (Davies & Brember 1992), or adopted cross-sectional designs to explore the impact of different types of pre-school provision (Davies & Brember 1997). Feinstein, Robertson & Symons (1998) attempted to evaluate the effects of pre-schooling on children's subsequent progress but birth cohort designs may not be appropriate for the study of the influence of pre-school education. The absence of data about children's attainments at entry to pre-school means that neither the British Cohort Study (1970) nor the National Child Development Study (1958) can be used to explore the effects of pre-school education on children's progress. These studies are also limited by the time lapse and many changes in the nature of pre-school provision which have

occurred. To date no research using multilevel models (Goldstein 1987) has been used to investigate the impact of both type of provision **and** individual centre effects. Thus little research in the UK has explored whether some forms of provision have greater benefits than others. Schagen (1994) attempted multilevel modelling but did not have adequate control at entry to pre-school.

In the UK there is a long tradition of variation in pre-school provision both between types (e.g. playgroup, local authority or private nursery or nursery classes) and in different parts of the country reflecting Local Authority funding and geographical conditions (i.e. urban/rural and local access to centres). A series of reports (House of Commons Select Committee 1989; DES Rumbold Report 1990; Ball 1994) have questioned whether Britain's pre-school education is as effective as it might be and have urged better co-ordination of services and research into the impact of different forms of provision (Siraj-Blatchford 1995). The EPPE project is thus the first large-scale British study on the effects of different kinds of pre-school provision and the impact of attendance at individual centres.

OVERVIEW OF RESEARCH METHODS

The EPPE project is a major study instituted in 1996 to investigate three issues which have important implications for policy and practice:

- the effects on children of different types of pre-school provision,
- the 'structural' (e.g. adult-child ratios) and 'process' characteristics (e.g. interaction styles) of more effective pre-school centres, and
- the interaction between child and family characteristics and the kind of pre-school provision a child experiences.

An educational effectiveness research design was chosen to investigate these topics because this enabled the research team to investigate the progress and development of individual children (including the impact of personal, socio-economic and family characteristics), and the effect of individual pre-school centres on children's outcomes at both entry to school (the start of Reception which children can enter between the ages of 4 and 5 plus) and at the end of Key Stage 1 (age 7 plus). Such research designs are well suited to social and educational research with an institutional focus (Paterson & Goldstein 1991). The growing field of school effectiveness research has developed an appropriate methodology for the separation of intake and school influences on children's progress using so called 'value added' multilevel models (Goldstein 1987, 1995). As yet, however, such techniques have not been applied to the pre-school sector, although recent examples of value added research for younger ages at the primary level have been provided by Tymms et al. 1997; Sammons & Smees 1998; Jesson et al. 1997; Strand 1997; and Yang & Goldstein 1997. These have examined the relationship between baseline assessment at reception to infant school through to Key Stage 1 (age 7 plus years).

School effectiveness research during the 1970s and 1980s addressed the question "*Does the particular school attended by a child make a difference?*" (Mortimore et al. 1988; Tizard et al. 1988). More recently the question of internal variations in effectiveness, teacher/class level variations and stability in effects of particular schools over time have assumed importance (e.g. Luyten 1994; 1995; Hill & Rowe 1996; Sammons 1996). This is the first research to examine the impact of individual pre-school centres using multilevel approaches. The EPPE project is designed to examine both the impact of type of pre-school provision as well as allow the identification of particular pre-school characteristics which have longer term effects. It is also designed to establish whether there are differences in the effects of individual pre-school centres on children's progress and development. In addition, the project explores the impact of pre-school provision for different groups of children and the extent to which pre-schools are effective in promoting different kinds of outcomes (cognitive and social/behavioural).

The 8 aims of the EPPE Project

- To produce a detailed description of the 'career paths' of a large sample of children and their families between entry into pre-school education and completion (or near completion) of Key Stage 1.
- To compare and contrast the developmental progress of 3,000+ children from a wide range of social and cultural backgrounds who have differing pre-school experiences including early entry to Reception from home.
- To separate out the effects of pre-school experience from the effects of education in the period between Reception and Year 2.
- To establish whether some pre-school centres are more effective than others in promoting children's cognitive and social/emotional development during the pre-school years (ages 3-5) and across Key Stage 1 (5-7 years).
- To discover the individual characteristics (structural and process) of pre-school education in those centres found to be most effective.
- To investigate differences in the progress of different groups of children, e.g. second language learners of English, children from disadvantaged backgrounds and both genders.
- To investigate the medium-term effects of pre-school education on educational performance at Key Stage 1 in a way which will allow the possibility of longitudinal follow-up at later ages to establish long-term effects, if any.
- To relate the use of pre-school provision to parental labour market participation.

The sample: regions, centres and children

In order to maximise the likelihood of identifying the effects of individual centres and also the effects of various types of provision, the EPPE sample was stratified by type of centre and geographical location.

- Six English Local Authorities (LAs) in five regions were chosen strategically to participate in the research. These were selected to cover provision in urban, suburban and rural areas and a range of ethnic diversity and social disadvantage. (Another related project covering Northern Ireland was instituted in April 1998 [Melhuish et al. 1997]. This will enable comparison of findings across different geographical contexts.)
- Six main types of provision are included in the study (the most common forms of current provision; *playgroups*, local authority or voluntary *day nurseries*, *private day nurseries*, *nursery schools*, *nursery classes*, and centres *combining care and education*. Centres were selected randomly within each type of provision in each authority.

In order to enable comparison of centre and type of provision effects the project was designed to recruit 500 children, 20 in each of 20-25 centres, from the six types of provision, thus giving a total sample of approximately 3000 children and 140 centres[1]. In some LAs certain forms of provision are less common and others more typical. Within each LA, centres of each type were selected by stratified random sampling and, due to the small size of some centres in the project (e.g. rural playgroups), more of these centres were recruited than originally proposed, bringing the sample total to 141 centres and over 3000 children.

---

[1] The nursery school and combined centre samples were added in 1998 and their cohorts will be assessed somewhat later; results will be reported separately and in combined form.

42

Children and their families were selected randomly in each centre to participate in the EPPE Project. All parents gave written permission for their children to participate.

In order to examine the impact of no pre-school provision, it was proposed to recruit an additional sample of 500 children pre-school experience from the reception classes which EPPE children entered. However in the five regions selected a sample of only 200+ children was available for this 'home' category.

The progress and development of pre-school children in the EPPE sample is being followed over four years until the end of Key Stage 1. Details about length of sessions, number of sessions normally attended per week and child attendance have been collected to enable the amount of pre-school education experienced to be quantified for each child in the sample. Two complicating factors are that a substantial proportion of children have moved from one form of pre-school provision to another (e.g. from playgroup to nursery class) and some will attend more than one centre in a week. Careful records are necessary in order to examine issues of stability and continuity, and to document the range of pre-school experiences to which individual children can be exposed.

Child assessments

Around the third birthday, or up to a year later if the child entered pre-school provision after three, each child was assessed by a researcher on four cognitive tasks: verbal comprehension, naming vocabulary, knowledge of similarities seen in pictures, and block building. A profile of the child's social and emotional adjustment was completed by the pre-school educator who knew the child best. If the child changed pre-school before school entry, he or she was assessed again. At school entry, a similar cognitive battery was administered along with knowledge of the alphabet and rhyme/alliteration. The Reception teacher completed the social emotional profile.

Further assessments were made at exit from Reception and at the end of Years 1 and 2. In addition to standardised tests of reading and mathematics, information on National Assessments will be collected along with attendance and special needs. At age 7, children will also be invited to report themselves on their attitudes to school.

Measuring child/family characteristics known to have an impact on children's development

1) Information on individual 'child factors' such as gender, language, health and birth order was collected at parent interview.

2) Family factors were investigated also. Parent interviews provided detailed information about parent education, occupation and employment history, family structure and attendance history. In addition, details about the child's day care history, parental attitudes and involvement in educational activities (e.g. reading to child, teaching nursery rhymes, television viewing etc) have been collected and analysed.

Pre-school Characteristics and Processes

Regional researchers liaised in each authority with a Regional Coordinator, a senior local authority officer with responsibility for Early Years who arranged 'introductions' to centres and key staff. Regional researchers interviewed centre managers on: group size, child staff ratio, staff training, aims, policies, curriculum, parental involvement, etc.

'Process' characteristics such as the day-to-day functioning within settings (e.g. child-staff interaction, child-child interaction, and structuring of children's activities) were also studied. The Early Childhood Environment Rating Scale (ECERS) which has been recently adapted (Harms, Clifford & Cryer 1998) and the Caregiver Interaction Scale (Arnett 1989) were also administered. The ECERS includes the following sub-scales:

- Space and furnishings
- Personal care routines
- Language reasoning
- Activities
- Interaction
- Programme structure
- Parents and staffing

In order that the more educational aspects of English centres could be assessed, Sylva,Siraj-Blatchford, Taggart & Colman (unpublished) developed four additional ECERS sub-scales describing educational provision in terms of: Language, Mathematics, Science and the Environment, and Diversity.

Setting the centres in context

In addition to describing how each centre operated internally, qualitative interviews were conducted with centre managers to find out the links of each setting to local authority policy and training initiatives. Senior local authority officers from both Education and Social Services were also interviewed to find out how each local authority implemented Government early years policy, especially the Early Years Development Plans which were established to promote education and care partnerships across providers in each local authority.

Case Studies

In addition to the range of quantitative data collected about children, their families and their pre-school centres, detailed qualitative data will be collected using case studies of several "effective" pre-school centres (chosen retrospectively as 'more effective' on the basis of the multilevel analyses of intake and outcome measures covering the period baseline to entry into reception). This will add the fine-grained detail to how processes within centres articulate, establish and maintain good practice.

The methodology of the EPPE project is thus mixed. These detailed case studies will use a variety of methods of data gathering, including documentary analysis, interviews and observations and the results will help to illuminate the characteristics of more successful pre-school centres and assist in the generation of guidance on good practice. Particular attention will be paid to parent involvement, teaching and learning processes, child-adult interaction and social factors in learning. Inevitably there are difficulties associated with the retrospective study of process characteristics of centres identified as more or less effective after children in the EPPE sample have transferred to school and it will be important to examine field notes and pre-school centre histories to establish the extent of change during the study period.

ANALYTIC STRATEGY

The EPPE research was designed to enable the linking of three sets of data: information about children's attainment and development (at different points in time), information about children's personal, social and family characteristics (e.g. age, gender, SES etc), and information about pre-school experience (type of centre and its characteristics).

Identifying individual centre effects and type of provision at entry to school

Longitudinal research is essential to enable the impact of child characteristics (personal, social and family) to be disentangled from any influence related to the particular pre-school centre attended. Multilevel models investigate the clustered nature of the child sample, children being nested within centres and centres within regions. The first phase of the analysis adopts these three levels inmodels which attempt to identify any centre effects at entry to reception class.

Given the disparate nature of children's pre-school experience it is vital to ensure that the influences of age at assessment, amount and length of pre-school experience and pre-school attendance record are accounted for when estimating the effects of pre-school education. This information is also important in its own right to provide a detailed description of the range of pre-school provision experienced by different children and any differences in the patterns of provision used by specific groups of children/parents and their relationship to parents' labour market participation. Predictor variables for attainment at entry to reception will include prior attainment (verbal and non-verbal sub scales), social/emotional profiles, and child characteristics (personal, social and family). The EPPE multilevel analyses will seek to incorporate adjustment for measurement error and to examine differences in the performance of different groups of children at entry to pre-school and again at entry to reception classes. The extent to which any differences increase/decrease over this period will be explored, enabling equity issues to be addressed.

After controlling for intake differences, the estimated impact of individual pre-schoolcentres will be used to select approximately 12 'outlier' centres from the 141 in the project for detailed case studies (see 'Case Studies' above). In addition, multilevel models will be used to test out the relationship between particular process quality characteristics of centres and children's cognitive and social/behavioural outcomes at the end of the pre-school period (entry to school). The extent to which it is possible to explain (statistically) the variation in children's scores on the various measures assessed at entry to reception classes will provide evidence about whether particular forms of provision have greater benefits in promoting such outcomes by the end of the pre-school period. Multilevel analyses will test out the impact of measures of pre-school process characteristics, such as the scores on various ECERS scales and Pre-School Centre structural characteristics such as ratios. This will provide evidence as to which measures are associated with better cognitive and social/behavioural outcomes in children.

Identifying continuing effects of pre-school centres at KS1

Cross-classified multilevel models have been used to examine the long term effects of primary schools on later secondary performance (Goldstein & Sammons, 1997). In the EPPE research it is planned to use such models to explore the possible mid-term effects of pre-school provision on later progress and attainment at primary school at age 7. The use of cross classified methods explicitly acknowledges that children's educational experiences are complex and that over time different institutions may influence cognitive and social/behavioural development for better or worse. This will allow the relative strength of any continuing effects of individual pre-school centre attendance to be ascertained, in comparison with the primary school influence.

THE LINKED STUDY IN NORTHERN IRELAND 1998-2003

The Effective Pre-school Provision in Northern Ireland (EPPNI) is part of EPPE and is under the directorship of Professor Edward Melhuish, Professor Kathy Sylva, Dr. Pam Sammons, and Dr. Iram Siraj-Blatchford. The study explores the characteristics of different kinds of early years provision and examines children's development in pre-school, and influences on their later adjustment and progress at primary school up to age 7 years. It will help to identify the aspects of pre-school provision which have a positive impact on children's attainment, progress, and development, and so provide guidance on good practice. The research involves 70 pre-school centres randomly selected throughout Northern Ireland.

The study investigates all main types of pre-school provision attended by 3 to 4 year olds in Northern Ireland: playgroups, day nurseries, nursery classes, nursery schools and reception groups and classes. The data from England and Northern Ireland offer opportunities for potentially useful comparisons.

SUMMARY

This "educational effectiveness" design of the EPPE research study enables modelling of the complicated effects of amount and type of pre-school provision (including attendance) experienced by children and their personal, social and family characteristics on subsequent progress and development. Assessment of both cognitive and social/behavioural outcomes has been made. The use of multilevel models for the analysis enables the impact of both type of provision and individual centres on children's pre-school outcomes (at age 5 and later at age 7) to be investigated. Moreover, the relationships between pre-school characteristics and children's development can be explored. The results of these analyses and the findings from the qualitative case studies of selected centres can inform both policy and practice. A series of 12 technical working papers will summarise the findings of the research.

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Technical Paper 2
Characteristics of the EPPE Project Sample at entry to the study

EXECUTIVE SUMMARY

The Effective Provision of Pre-school Education (EPPE) project was designed to explore the impact of pre-school provision on young children's progress and development from age three plus to seven years.

Full details of the project design and scope are provided in the first working paper of this series. *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 1*. This second paper provides a description of the child sample at entry to the study. In order to investigate the impact of different types of provision and of individual pre-school centres it is essential to have accurate baseline data about children's cognitive attainments and details of their social and behavioural development, so that subsequent progress and development can be measured. The information is also interesting in its own right because it provides a snapshot of children and families at the start of the study.

Children's personal, social and family characteristics can influence their progress and development. As a consequence it is essential to establish the extent to which the background characteristics of children attending different centres and types of pre-school provision vary. Only in this way is it possible to identify any possible pre-school effects on children's later educational outcomes (at entry to school, and on later attainments at the end of Key Stage 1). To date no studies of pre-school provision have adopted an educational effectiveness research design which enables this issue to be explored. There is considerable policy interest in the question of whether certain kinds of pre-school experience have an 'equalising impact', i.e. help to reduce inequalities in children's later educational outcomes (affective, social and cognitive). By investigating the relationships between children's personal, social and family characteristics at entry to pre-school to establish the nature of existing disparities in attainments and their relationships to patterns of pre-school use, it will be possible to address this important issue.

This working paper provides an analysis of baseline information about a large sample of young children (n=2146) entering 114 different pre-school centres drawn from four types of pre-school provision during the period 1997 to 1998, and up-to-date evidence about the links between background and attainment at age three plus[1]. This information enables contextualisation of the entry measures of attainment and social and behavioural development at entry to the EPPE study. The paper is divided into three sections. The first describes children's entry attainments and their characteristics at entry. The second section reports details obtained from the parent interviews and examines patterns of association between parent and family characteristics and children's entry assessments. The third section describes the multilevel analysis strategy used to examine the relationships between children's personal, family and home environment characteristics and their cognitive attainments in order to provide a secure baseline for the later study of children's progress and development over the pre-school period.

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[1] In 1998 the EPPE Project was extended to include nursery schools and combined centres. Data on a sample of 27 of these centres will be added to the main sample in the final report of the Project in 2001.

MAIN FINDINGS

The descriptive analyses of the EPPE sample at entry to the study draw together information from parent interviews and from assessments of individual children. The results provide powerful evidence of associations between young children's overall cognitive attainment and a variety of personal, socio-economic and family characteristics. In line with earlier longitudinal birth cohort studies, the results reveal the existence of strong links between parents' educational and occupational backgrounds and their children's cognitive development.

Differences were also identified which point to the adverse impact on later cognitive attainment, of premature birth, and relationships with gender, family size and ethnic and language background. In addition, aspects of the 'educational climate' of the home (such as the extent to which the parents are involved in reading to the child, using the library, teaching songs and nursery rhymes) were found to be correlated with children's cognitive attainments at age three plus.

These differences reflect variations between the five geographical regions included in the study, and patterns of access to different types of pre-school centre. The baseline analysis revealed important differences in the characteristics of children entering the four main types of pre-school provision sampled (playgroups, nursery classes, Local Authority day nurseries, private day nurseries).

The existence of differences in children's cognitive attainment at entry to different centres and by types of provision (as well as statistically significant associations between children's personal and family background characteristics and their attainments) have important implications for a study which seeks to explore the impact of pre-school upon children's subsequent progress and development. These findings point to the importance of making proper control for differences in the characteristics of child intakes in comparisons of specific pre-school centres and different types of provision.

The results of the EPPE entry assessments suggest that there are statistically significant variations in patterns of access to, and use of, different kinds of pre-school provision. These variations may have implications for policies concerned with combating social disadvantage and exclusion. The relationships between parents' labour market participation and child care use are not straightforward. They are likely to reflect a complex mix of choice, other child-care commitments for siblings, and the limitations imposed by the part-time and in some instances inflexible nature of much pre-school provision. In addition, families' abilities to pay for certain kinds of provision and geographical access to and availability of places at centres, as well as local employment opportunities, constrain participation in the labour market. Thus, the EPPE data indicate that for only a minority of families is the use of pre-school provision associated with mothers' full time participation in the labour market.

KEY POINTS

The main findings of the study indicate that there are statistically significant associations between children's overall cognitive attainments at entry to pre-school (as measured by total score on the British Abilities Scale) and a range of personal, family and home environment characteristics. Some key points are listed below.

- Girls show significantly higher overall cognitive attainments at entry to the study when the impact of other factors is controlled, though there are suggestions that gender effects are moderated by social class as measured by fathers' occupation.
- Older children have significantly higher scores than others at entry reflecting the known relationship between cognitive development and maturity.
- Children from large families (3 or more siblings) have significantly lower overall cognitive attainments than those from smaller families
- Children born prematurely (37 weeks or fewer weeks gestation) show a significantly lower cognitive attainments at entry.
- Children whose first language is not English show significantly lower cognitive attainments.
- There are differences between children from different ethnic backgrounds in terms of overall cognitive attainments at entry to pre-school, and these differences are in line with those reported for children at primary school in recent studies (see Strand, 1999; Slough Borough Council 1998). Nonetheless, they are much reduced when account is taken of the influence of factors such as parents' educational and occupational characteristics. It should be noted that the ethnic differences in non-verbal cognitive attainment (in contrast to those of total score which includes a verbal component) were not statistically significant after control of other background factors, indicating that verbal assessments of cognitive attainments are less appropriate for some ethnic minority groups.
- Socio-economic background is highly significant. Children whose mothers had higher qualification levels were at an advantage in terms of overall cognitive attainment at entry to the study, as were children whose fathers were in professional or managerial work. By contrast, those whose fathers were not working, or were in semi or unskilled manual work had lower scores.
- A number of measures of home environment have a positive association with higher cognitive attainments particularly the frequency with which parents reported reading to their child, took them to the library, children played with letters or numbers, parents taught the alphabet, and taught songs/nursery rhymes to children. It should be noted that, although such activities are themselves associated with parents' educational status, they were found to have a significant impact even when parents' educational and occupational status were controlled for in the multilevel analysis.

- The analysis of children's baseline scores at entry to the EPPE study provides evidence that children who have had more pre-school experience (in terms of entering the target centre at a younger age and attending for more sessions per week) show higher cognitive attainments than others. These relationships hold even when controlling for the influence of child, family and home environment factors noted above.

Goldstein (1998) has argued that, "In order to describe the complex reality that constitutes educational systems we require modelling tools that involve a comparable level of complexity" (p2). Multilevel modelling approaches were selected for the analysis of children's assessments at entry to the EPPE study in order to explore the complex range of personal, social and family influences upon young children's cognitive attainments.

The multilevel analyses of children's overall cognitive attainments at entry to the EPPE study show the existence of important variations between the 114 pre-school centres, and according to type of pre-school provision when no control is made for intake differences in terms of children's personal, family and home environment characteristics. After including information about such factors no significant differences were found for the four types of school provision, and the percentage of total variation on children's scores attributed to their pre-school centre was reduced from 25.9 per cent to only 2.4 per cent. These findings are important because they show that the EPPE data base provides good control for relevant background characteristics of children at entry to the pre-school study.

The contextualisation of children's cognitive assessments at entry to the EPPE study suggests that later analyses of the impact of pre-school centres on children's progress up to school entry (i.e. at transfer to reception classes) can be interpreted securely in the knowledge that the baseline controls of intake differences for the 114 pre-school centres are robust. Furthermore, the absence of significant differences in the EPPE entry assessments according to type of pre-school provision or region (after control for child, parent and home background factors concerning differences in intake at the pre-school centre level) likewise indicates that later comparison of the impact of type of pre-school provision will also be securely based. The modelling strategy used to contextualise the EPPE study's entry assessments is of theoretical, as well as of practical, interest because it identifies and separates the relative contribution to young children's cognitive attainment of factors relating to child, parental and family characteristics, and measures of the home environment at age 3 plus years.

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INTRODUCTION

The Effective Provision of Pre-School Education project was designed to explore the impact of pre-school provision on young children's progress and development from age three to seven years. The main aims of the study are:

- to produce a detailed description of the 'career paths' of a large number of children and their families between entry into pre-school education and completion (or near completion) of Key Stage 1.
- to compare and contrast the developmental progress of over 2,000 children from a wide range of social and cultural backgrounds who attend different types of pre-school provision.
- to establish whether some pre-school centres are more effective than others in promoting children's cognitive and social/emotional development during pre-school years (age 3-5) and the beginning of primary education (4-7 years).
- to discover the individual characteristics (structural and process) of pre-school education in those centres found to be most effective.
- to investigate differences in the progress of different groups of children, say second language learners of English, children from disadvantaged backgrounds and both genders.

SECTION 1

THE EPPE SAMPLE

Children were recruited to the EPPE study from four main types of pre-school provision (nursery classes, playgroups, private or voluntary day nurseries and combined centres, local authority day nurseries) in five regions during the period January 1997 to June 1998. (A further sample of children attending nursery schools has been recruited from September 1998. The results for this form of provision will be reported in a later paper). The original sample design was intended to include 20 children from 20 centres chosen randomly within each of the five regions giving a total of 400 children for each pre-school type and a total sample of 2000 pre-school children in the study. It was recognised that, due to geographical variations in the distribution of different types of pre-school centres, some regions would select more centres of specific kinds (e.g. East Anglia, playgroups; the North East, extra local authority day nurseries) in order to maintain balance across the EPPE sample as a whole.

Children became eligible for recruitment to the EPPE sample when they reached their third birthday or when they first entered a centre in the sample if they were aged over three (up to age 4 years 3 months). Children were assessed within ten weeks of entry or of their third birthday using a range of entry assessments. Parental interviews were undertaken to obtain background details about children's earlier childcare experiences, health, social and family characteristics. Children included in the EPPE sample also needed to satisfy the following criteria:

- stay for at least 10 weeks in the EPPE centre subsequent to recruitment to the study (this was considered to be the minimum time in which a pre-school centre might have a traceable impact). Children who had been given entry assessments but left this setting within 10 weeks were characterised as 'phantom' children who were 'lost' to the sample. Attempts are made to track all other children if they change centres.

- spend three or more sessions (or 5 hours) (relaxed to 2 sessions in rural playgroups) a week at their EPPE pre-school centre. Additionally, if the child attended more than one pre-school centre (those in dual provision) the EPPE centre must be the dominant centre (in terms of amount of time per week). Children recruited to the sample who were later found to be in dual provision and who failed to meet these criteria (or who moved to dual provision within 10 weeks and for which the EPPE centre was no longer the dominant mode) were categorised as 'impostors' and dropped from the study.

In all, a total of 2146 children from four types of provision were included in the original EPPE sample (5% over the recruitment target). In addition a substantial number of children (over 300) were baseline assessed who later proved to be either ineligible (in dual provision, left before 10 weeks or left and could not be traced to another centre). Due to high mobility rates and the large numbers of small playgroups, 14 additional centres were selected in an effort to ensure the sample size would remain adequate for subsequent analysis, giving a centre sample of 114 in all.

Table 1.1. provides basic details about the distribution of the EPPE child sample at entry to the study. Just over half (52.4%) of the sample are male, and just over three quarters were classified as of White UK heritage. The next most numerous ethnic group were of mixed heritage (6.5%), followed by those of White European (4.1%), Black Caribbean (3.5%) and Pakistani (2.7%) heritage. Just over a tenth (10.5%) of the sample spoke two or more languages, although English was the first language of the vast majority of children (92.8%).

TABLE 1.1: DISTRIBUTION OF THE EPPE SAMPLE AT ENTRY

		n*	%
Region	East Anglia	464	21.6
	Shire County	463	21.6
	Inner London	469	21.9
	North East	365	17.0
	West Midlands	385	17.9
Gender	Female	1021	47.6
	Male	1125	52.4
Ethnic Group	White UK heritage	1655	77.1
	Mixed heritage	139	6.5
	White European heritage	88	4.1
	Black Caribbean heritage	74	3.5
	Black African heritage	48	2.2
	Black Other heritage	9	0.4
	Pakistani heritage	58	2.7
	Indian heritage	31	1.4
	Bangladeshi heritage	9	0.4
	Chinese heritage	3	0.1
	Other heritage	31	1.4
Child's First Language	English	1991	92.8
	Other	147	6.8
	Two or more languages, including English	8	0.4
Number of Languages spoken by child	None (e.g. elective mute, language delay)	2	0.1
	1	1918	89.4
	2	208	9.7
	3	18	0.8

* n of children = 2146

PRE-SCHOOL EXPERIENCE

A total of 114 centres are involved in the EPPE study - 25 nursery classes, 34 playgroups, 31 private day nurseries and 24 local authority day nurseries (more playgroups were added to the sample to reflect the numbers of small rural playgroups in East Anglia). Table 1.2 provides simple distributions related to the amount of provision experienced by pre-school sample. It can be seen that the largest proportion of children attended 5 sessions a week (36.9%), although for nearly one in ten the figure was only two sessions and over a fifth of the sample (21.4%) attended for 10 sessions.

TABLE 1.2: PRE-SCHOOL EXPERIENCE OF EPPE SAMPLE

	n*	%
Number of pre-school sessions attended per week		
2	208	9.7
3	280	13.1
4	251	11.7
5	792	36.9
6-7	95	4.4
8-9	57	2.7
10	459	21.4
Not known	4	0.2
Number of hours of pre-school experience per week		
4 - 6	186	8.7
6 plus - 8	167	7.8
8 plus - 10	177	8.3
10 plus - 12	175	8.2
12 plus - 14	627	29.2
14 plus - 20	200	9.3
20 plus - 25	284	13.2
25 plus - 30	80	3.7
30 plus - 40	150	7.0
40 plus - 50	86	4.0
50 plus	6	0.3
Not known	9	0.5
Type of pre-school centre		
Nursery Class	588	27.4
Playgroup	609	28.4
Private Day Nursery	516	24.0
Local Authority Day Nursery	433	20.2

* n of children = 2146

In terms of hours of pre-school attended, the largest group spent between 12 and 14 hours at their centre each week (29.1%), while 13.2 per cent experienced between 20 and 25 hours at pre school.

A small number (86 children or 4%) spent between 40 to 50 hours a week at their centres, while six children (0.3%) attended for more than 50 hours each week.

The average number of sessions attended per week for the EPPE sample was 5.3 (sd 2.6). In terms of hours per week the average was 17.1 (sd 10.5). As would be expected, the number of sessions and hours of attendance varied markedly by type of pre-school provision. The average hours of attendance was 27.2 in Local Authority Day Nurseries but only 9.4 in playgroups (see Table 1.3).

TABLE 1.3: VARIATION IN AMOUNT OF PROVISION BY TYPE OF PRE-SCHOOL CENTRE

	Hours		***Sessions***	
	Mean	*sd*	*mean*	*sd*
Nursery Class n = 588	14.5	4.9	5.8	1.9
Playgroup n= 609	9.4	4.0	3.7	1.5
Private Nursery n= 516	20.9	12.6	5.2	2.7
Local Authority Day Nursery n=433	27.2	10.4	8.0	2.6
Total Sample	**17.1**	**10.5**	**5.3**	**2.6**

n= 2146

The average number of children in the EPPE sample at the centre level was 18.8. Figures in Table 1.4 show that in some centres it was not possible to recruit the numbers of children eligible for the EPPE child sample originally anticipated. In particular some playgroups were affected by the introduction of vouchers and threatened with closure or amalgamation during this period. The earlier movement of children into nursery classes or schools also had an impact, as did mobility in some areas (where children had entry assessments but then moved centre before the10 week minimum period necessary to be retained in the study).

TABLE 1.4: NUMBERS OF EPPE CHILDREN AT THE CENTRE LEVEL

i) Distribution of EPPE Sample	**n of centres***	**%**
<10	2	1.8
10 - 14	23	20.2
15 - 17	26	22.8
18 - 20	18	15.8
21 - 23	18	15.8
24 - 28	27	23.7

ii) Number of EPPE Children at Centre Level		
Mean 18.8	**Sd** 5.2	**Range** 6.28

n of centres = 114, n of children = 2146

In all, over three quarters of the centres recruited 15 or more children to the study and nearly a quarter recruited 24 children or more. In total 84 centres contributed 16 or more EPPE children, an acceptable figure for multilevel modelling of individual centre effects on children's later progress and development. (Other centres will be retained in the multilevel analysis but the smaller numbers will increase the size of the confidence limits associated with estimates of individual centre effects for these centres. Data for all centres and children will be used to estimate the impact of type of pre-school provision and of child and family background characteristics on attainment, progress and development.) In addition, data for all centres will be used to examine the relationships of measures of pre-school processes and quality and children's outcomes.

Child Baseline Assessments	
Block Building (spatial ability)	**Visual Perceptual matching, especially of spatial orientation**
Verbal Comprehension (verbal ability)	Receptive language: understanding of oral instructions involving basic language concepts
Picture Similarities (pictorial reasoning ability)	Non-verbal reasoning shown by matching picture that have a common element or concept
Naming Vocabulary (Verbal ability)	Expressive language; knowledge of names
EAL children: only the non-verbal measures i.e. block building and picture similarities.	

EAL = English as an additional language.

Children in the EPPE sample were assessed at entry to the study using four sub-scales of the British Ability Scales (BAS) - Block Building, Picture Naming, Picture Similarities and Verbal Comprehension. These can also be aggregated to form a total score indicative of general cognitive attainment. The Block Building and Picture Similarities scores can be aggregated to form a non-verbal sub-score. These items are less dependent on verbal instructions and some children only completed these scales eg those not fluent in English. The picture naming and verbal comprehension scores can be totalled to give a total verbal sub score. A small number of children (32 or 1.5%) did not obtain a valid non-verbal BAS score (due to administration problems related to behavioural or communication difficulties). These children were retained in this study where information obtained about social and behavioural development by means of their centre worker completed assessments using the Adaptive Social

Behaviour Inventory (ASBI) form, or from parent interviews was available. In all 2061 children (96% of the sample) completed both the verbal and non-verbal BAS assessments.

An inevitable consequence of the nature of the EPPE research design was a considerable variation in the age of pre-school children when recruited to the study, a reflection of the variation in provision and availability of places as well as parental views about when their child was ready for pre-school. Because of this the study will be able to explore the impact of age at entry to pre-school as well as amount and duration of pre school experience in later papers in this series.

• AGE AND BAS SCORES

Table 1.5 shows the distribution of children's ages in months at entry to the study. The range in age covered 17 months in total. It can be seen that the distribution is skewed towards the younger age group, and that over two-thirds of the sample were aged three years three months or under, with the largest group being 37 months of age. The average for the sample being 39.8 months (sd 4.3 months). In all just under 10 per cent of children were aged four years or over.

TABLE 1.5: AGE IN MONTHS WHEN BAS FIRST ADMINISTERED

Age in months at BAS	*n**	%
35	12	0.5
36	428	19.9
37	485	22.6
38	353	16.4
39	157	7.3
40	82	3.8
41	52	2.4
42	59	2.7
43	62	2.9
44	61	2.8
45	44	2.1
46	60	2.8
47	81	3.8
48	72	3.4
49	65	3.0
50	37	1.7
51	25	1.2
52	6	0.3
Missing	5	0.2

n of children = 2146

Cognitive abilities are, in part, age dependent and, as would be expected, children's age showed a significant association with their scores on the BAS sub-tests and their total raw BAS score, with older children tending to obtain higher scores. The correlation is strongest for the Block Building sub-scale (see Table 1.6), followed by the non-verbal score, suggesting that pre-school children's spatial skills may be more influenced by age than their language skills.

TABLE 1.6: CORRELATIONS BETWEEN CHILD'S AGE IN MONTHS AT BAS ENTRY ASSESSMENT AND SCORES IN THE BAS ASSESSMENTS

	r	n
Block	0.473	2111
Picture Naming	0.301	2063
Picture Similarities	0.325	2111
Verbal Comprehension	0.251	2065
Total BAS Score	0.426	2060
Non Verbal Score (Block + Picture Similarities)	0.455	2108
Verbal Score (Picture Naming + Verbal Comprehension)	0.306	2062

$p < 0.001$

The relationship between age in months and children's BAS performance can also be illustrated for selected groups covering the 12 month age range from 3.0 to 4.0 years (see Table 1.7).
Despite the different numbers of children in each group, it is evident that older the group of children (48 months)show a significantly higher average score than the youngest group (age 36 months).

TABLE 1.7: EXAMPLE OF VARIATION IN THE MEAN BAS SCORES BY AGE IN MONTHS

	36 months		*39 months*		*42 months*		*45 months*		*48 months*	
	Mean	*sd*	*Mean*	*sd*	*Mean*	*sd*	*Mean*	*sd*	*Mean*	*sd*
Total BAS Score	46.86	11.35	47.50	12.01	50.37	13.17	54.10	13.27	66.21	12.58
	n = 415		n = 150		n = 54		n = 39		n = 71	
Total Non-Verbal Score	17.63	5.71	18.46	5.56	20.13	7.27	21.74	6.86	27.60	6.69
	n = 420		n = 156		n = 56		n = 43		n = 72	
Total Verbal Score	29.15	7.40	29.05	8.39	29.74	8.36	32.03	7.34	38.52	7.76
	n = 415		n = 151		n = 54		n = 39		n = 71	

Due to doubts about the suitability of using nationally standardised scores in assessments which cover a relatively small number of points in a scale (seeTymms, 1998) standardised scores are not reported here [1]. In later multivariate analyses age in months at assessment will be treated as an independent (predictor) measure and controlled for. This procedure is important due to the variation in the EPPE children's ages between individual pre-school centres and between the four types of pre-school provision (discussed below).

Children recorded a wide range in BAS scores at entry as is illustrated in Table 1.8. The lower half of this table also shows the correlations between children's scores in the four sub-scales and total BAS scores. The strongest association was between the two verbal subscales - picture naming and verbal comprehension (r=0.630).

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[1] It should be noted that the EPPE sample is considerably larger than that used for the BAS standardisation for the 36 to 39 month age range, although because it is not a random or nationally representative sample it cannot be treated as representative of pre-school children as a whole.

TABLE 1.8: VARIATION IN CHILDREN'S BAS ASSESSMENTS AT ENTRY TO EPPE STUDY

i] Range in BAS sub-scores and total score at entry

	mean	sd	Min	Max	Top Quartile	Bottom Quartile
Block	4.77	3.34	0	16	7	2
Picture Naming n = 2064	16.39	4.65	0	27	19	12
Picture Similarities n = 2112	14.68	4.58	0	29	17	12
Verbal Comprehension n =2066	14.10	4.50	0	32	17	10
Total Non-Verbal Score* n = 2109	19.45	6.76	0	44	24	15
Total Verbal Score n = 2063	30.51	8.26	0	56	36	24
Total BAS Score n = 2061	50.06	13.8	0	90	59	40

ii] Correlations between children's scores on the different BAS assessments at entry

	Block	***Picture Naming***	***Picture Similarities***	***Verbal Comprehension***	***Total BAS Score***
Block	1.00	0.443 n=2109	0.443 n=2109	0.444 n=2063	0.710 n=2061
Picture Naming		1.00	0.471 n=2062	0.630 n=2063	0.835 n=2061
Picture Similarities			1.00	0.408 n=2064	0.755 n=2061
Verbal Comprehension				1.00	0.809 n=2061
Total BAS Score					1.00

GENDER AND BAS SCORES

A statistically significant difference (p<0.05) was found between the BAS performance of girls and boys at entry to the study. Table 1.9 illustrates that on average girls outperformed boys on all assessments although the higher standard deviations indicate greater variability in boys' performance around the mean for all subscales.

Further analyses were conducted to establish whether the higher performance of girls held for all social class groups. The results indicated that girls' performance was not significantly different from that of boys for children whose fathers were in professional occupations (Registrar General's Classification Class I), indeed the mean score for boys was slightly higher than for girls in this instance. For other occupational groups the gender difference was in favour of girls and was significant statistically for children whose fathers were in the non-manual groups II and III, and manual groups III and V. For children whose fathers were in semi-skilled manual work (class IV) the mean scores of girls were higher but the difference was not statistically significant. These results suggest that, for young children whose fathers are in employment which is accorded the highest social status in terms of occupational classification schemes, there is no evidence of under performance by boys. It will be of interest to establish whether the pattern of relationships between gender and performance identified at entry to the EPPE study for these young children remains stable for children of different social class backgrounds over the pre-school period.

TABLE 1.9: BAS SCORES AT ENTRY ANALYSED BY GENDER

	BOYS			*GIRLS*		
	n	*mean*	*sd*	*n*	*mean*	*sd*
Block	1102	4.59	3.37	1010	4.96	3.30
Picture Naming	1076	16.02	4.73	988	16.80	4.53
Picture Similarities	1100	14.22	4.67	1012	15.18	4.44
Verbal Comprehension	1077	13.82	4.64	989	14.41	4.32
Non-Verbal Score	1100	18.81	6.85	1009	20.15	6.59
Total Verbal Score	1076	29.84	8.45	987	31.23	7.99
Total BAS Score	1075	48.77	13.53	986	51.45	12.98

ETHNIC GROUP AND BAS SCORES

As noted earlier, less than a quarter (22.9%) of the EPPE project child sample was of minority ethnic background and the project design was not intended to form a nationally representative sample. Given the small number of certain ethnic groups (Black- other, Chinese, Bangladeshi and the Other group) comparisons of the entry attainments of different ethnic groups at entry to the study should be treated as tentative (for example, the ethnic composition of children attending the four different types of provision varied as will be shown in the next sub-section). Figures are reported for the seven most numerous groups in the sample.

Table 1.10 illustrates the existence of differences in BAS attainment at entry for specific groups at entry to the study. The results indicate significant differences in the average attainment of the seven groups, however, they should be interpreted with considerable caution because no account is taken of the impact of language fluency or of differences in parental education or socio-economic factors which are likely to have influenced the results (seeSammons, 1995 for a discussion). Sections 2 and 3 of this paper consider these aspects further. Technical Paper 4 (Melhuish et al, 1999a) also explores the relationships between socio-economic and parental education measures and patterns of pre-school use in more detail.

TABLE 1.10: BAS SCORES AT ENTRY ANALYSED BY ETHNIC GROUP

Ethnic Group	*Total BAS Score*			*Age in months at BAS*	
	n	**mean**	**sd**	**mean**	**sd**
White UK	1634	51.45	13.09	39.9	4.41
White European	69	48.23	12.99	38.9	3.20
Black Caribbean	74	46.18	10.52	39.1	4.03
Black African	43	41.79	12.55	38.7	3.58
Indian	30	44.17	14.69	38.7	3.52
Pakistani	45	34.04	12.47	40.7	4.49
Mixed	131	46.96	12.17	38.7	3.61

Ethnic Group	*Total Non Verbal Reasoning Score*			*Total Verbal Reasoning Score*		
	n	**mean**	**sd**	**n**	**mean**	**sd**
White UK	1636	19.80	6.77	1636	31.64	7.83
White Europe	86	18.79	6.41	69	28.67	8.73
Black Caribbean	74	18.76	6.05	74	27.42	6.34
Black African	46	16.59	6.29	43	24.95	7.39
Indian	31	19.90	8.10	30	24.23	7.56
Pakistani	54	15.98	7.12	45	18.09	8.23
Mixed	133	18.32	6.25	131	28.50	7.97

Overall, children from the Pakistani group recorded the lowest mean total BAS score (mean = 34.0) followed by those of Black African heritage (mean = 41.8). Children of White UK heritage had the highest average score (mean = 51.5). Ethnic differences in children's non-verbal scores were smaller (performance in these areas is less likely to be influenced by language and socio-economic factors). In this non-verbal assessment children of Indian heritage and those of White UK heritage obtained the highest average scores, while those of Pakistani and Black African, recorded the lowest scores.

Also shown in Table 1.10 is the average age in months of each group at BAS. Differences in the average age of children of different ethnic origins are fairly small although the Pakistani group were somewhat older than those of Indian, White European or Mixed heritage. The results suggest that age differences are not likely to account for the ethnic differences in children's BAS performance evident at entry to the study. Although the EPPE sample is not a representative sample, and the numbers of ethnic minority children in the study are small, the pattern of differences in attainment reported here is in line with those found amongst larger samples of school age children (Slough Borough Council, 1998; Strand 1999).

It will be important to monitor any changes in the pattern of ethnic differences in children's cognitive attainments as they progress through pre-school and into primary school to establish whether differences are reduced by the time children enter school. This study will also explore the extent of variation in the pre-school experiences of children of different ethnic groups (in terms of measures of pre-school centre processes and quality).

• TYPE OF PRE-SCHOOL PROVISION

Differences were identified in both the mean ages and BAS performance of children entering the four types of pre-school provision. As would be expected reflecting different recruitment policies, children entering nursery classes were significantly older than those attending the other types of provision The range amongst individual centres in the EPPE study in the mean age of children, number of children in the EPPE sample and the mean total BAS scores of children at the centre level is illustrated in Table 1.11.

TABLE 1.11: VARIATION BETWEEN CENTRES IN NUMBERS OF EPPE CHILDREN, MEAN BAS SCORES AND MEAN AGE BY TYPE OF PRE-SCHOOL PROVISION

	Nursery Classes [n = 25]		*Playgroups [n = 34]*		*Private Nurseries [n = 31]*		*LA Day Nurs. [n = 24]*	
	mean	*sd*	*mean*	*sd*	*mean*	*sd*	*mean*	*sd*
Average Number of EPPE Children Recruited	23.52	3.14	17.91	4.65	16.65	5.14	18.04	5.01
Age at BAS	44.77	3.79	37.73	2.27	37.94	2.94	38.10	2.81
Total BAS Score	56.69 n=553	13.76	45.21 n=584	11.28	52.36 n=513	11.58	45.13 n=411	12.88

It can be seen that, at entry to the study, the average total BAS scores of children in playgroups and local authority nurseries were lower than those of children in other forms of provision. The higher scores of those in nursery classes are likely to reflect the older average age of children entering nursery classes as there is a significant link between age and cognitive attainment shown earlier in Table 1.6. The higher scores of those in private nurseries are also likely to reflect the impact of background factors such as parents' education and occupational levels (these issues are explored further using parent interview information and multilevel analyses in section 2 and 3 of this Technical Paper).

It was notable that particular ethnic groups were more likely to attend certain kinds of provision reflecting, in part, geographical variations in the distribution of particular ethnic groups across the five regions included in the EPPE project. Also that in terms of average number of sessions per week in pre-school centres, children of Black Caribbean and of Black African heritage were likely to spend longer per week in pre-school provision (see Appendix 1). For example, nearly two thirds (64.9%) of Black Caribbean, around half (54.2%) of Black African children and 41.7 per cent of children with Mixed heritage were in Local Authority Nurseries, whereas the comparable figures for the UK White, European White and Indian groups were considerably lower at around 15 to 20 per cent. In comparison with other groups children of Indian and Pakistani backgrounds were more highly represented in playgroups.

Reflecting these differences in type of provision attended by children of different ethnic groups, there were clear differences in the number of sessions per week that particular groups attended their pre-school centre. For example the average number of sessions per week for Black Caribbean was the highest at 8.7 whereas for Indian children the average was 5.7 and for UK White 5.1 sessions (see

Appendix 1). Again, this pattern of attendance is likely to reflect the greater incidence of social disadvantage experienced by some ethnic groups (see Melhuish et al, 1999a).

It will clearly be important to examine the impact of differences in amount (number of sessions per week and number of weeks attended) and type of provision in examining children's subsequent progress and development over the pre-school years.

• AGE AT ENTRY TO PRE-SCHOOL

In addition to information about children's attainments at entry to the EPPE study, the baseline data included information about children's ages at entry to their target pre-school centre.

TABLE 1.12 VARIATION IN CHILDREN'S AGE AT ENTRY TO TARGET PRE - SCHOOL CENTRE

i) All Children

Age in Months	*n*	*%*
0-6	106	4.9
6 plus-12	79	3.7
12 plus -18	74	3.4
18 plus -24	111	5.2
24 plus -30	343	16.1
30 plus -36	615	28.7
36 plus - 42	397	18.5
42 plus - 48	379	17.7
48 plus	41	1.9
not known	1	0.0

n = 2146

ii) By Pre School Type

	mean age in mths	*sd*	*n*
Nursery Class	43.3	3.90	588
Playgroup	33.6	3.81	609
Private Day Nursery	25.1	11.94	516
Local Authority Day Nursery	25.8	11.76	432

n = 2145 * missing data excluded

66

iii Partial correlations between age in months at entry to target pre-school and total BAS scores, controlling for age at BAS assessment

	Partial r	*n*
All children	- 0.154	2056
Nursery Class	0.115	550
Playgroup	- 0.067ns	581
Private Day Nursery	- 0.131	510
Local Authority Day Nursery	- 0.190	407

Table 1.12 i) shows the range in children's ages at entry to their target centre. It can be seen that under nine per cent of children were aged 12 months or under. In all 17 per cent of children entered by the age of 2 years. The largest group in the EPPE study started at their target centre aged between 30 and 36 months (28.7%). Overall, around 60 per cent of the EPPE children entered their centre by the age of three years.

As would be expected given their different entry policies, the average age of children starting pre-school centres varied markedly according to type of pre-school provision. The average age of children starting at private day nurseries and at Local Authority Day nurseries was lowest at around 25 months. For nursery classes by contrast it was around 43 months.

It has already been shown that age of BAS assessment is correlated (r = 0.426) with children's cognitive attainments at entry to the study (see Table 1.6). Age at entry to the target pre-school is also found to be correlated with total BAS scores for the EPPE sample (r = 0.194). However, age at entry to the target pre-school and age at first BAS are themselves strongly associated (r = 0.693). Given this association, partial correlation analysis was used to establish whether age at entry to pre-school shows any relationship after controlling for age at BAS. The results are shown in Table 1.12 iii). For all children taken together the partial correlation indicates that older age at entry is negatively correlated with total BAS score. This suggests that a younger age at entry to the target pre-school is associated with higher cognitive attainment **when age at BAS is controlled**. However, examining the results by type of pre-school provision it can be shown that this relationship does not hold for those entering nursery classes (where a weak but significant positive correlation is found). It should be noted that there was much less differences for nursery class children between age at entry and age at BAS (the two being very highly correlated at 0.977) than for other groups. Also such children being older are likely to have had significant other pre-school experience (see Technical Paper 4, Melhuish et al 1999a for further details). For playgroup children the partial correlation between age at entry to target pre-school was negative but not significant, but for children in both Private Day Nursery and those in Local Authority Nursery provision the partial correlation was significant and negative. It should be noted that children who attended pre-school centres of these two types entered at a younger age on average (just over two years) and also showed greater variation in starting age (largersds). The impact of length of time spent at the target pre-school centre before entry to the study, on cognitive attainment at entry is explored further in Section 3 of this paper using multilevel models.

• CHILDREN'S SOCIAL AND BEHAVIOURAL DEVELOPMENT

Children's social and behavioural development are a vital part of effective pre-school provision and are considered to be of equal importance to cognitive outcomes in the EPPE research. Children were assessed by the early years worker who knew them best at entry to the study, usually within two months of the BAS assessments. The Adaptive Social Behavioural Inventory form consists of 30 items and in a small minority of cases some but not all items were completed (where the respondent felt unable to make a judgement for a specific statement). In all, ASBI returns were collected for 2137 children (99.7% of the total sample). Full data (i.e. no missing items) were collected for 1874 children (87.4%).

The ASBI form involves rating children by means of athree point scale 'rarely or never', 'sometimes' or 'almost always' in terms of specific items. Table 1.13 illustrates the responses for selected items.

It is notable (as with other behavioural measures) that most children are rated positively, although there is greater range evident in early years workers' views on some assessments.

TABLE 1.13: CHILDREN'S SCORES ON SELECTED ASBI ITEMS AT ENTRY TO THE STUDY

	Rarely or Never		*Sometimes*		*Almost Always*	
	n	*%*	*n*	*%*	*n*	*%*
Item 7 Is sympathetic towards other children's distress, tries to comfort others when they are upset. n = 2128	460	21.6	1028	48.3	640	30.1
Item 17 Asks or wants to go and play with other children. n = 2125	312	14.7	884	41.6	929	43.7
Item 18 Is calm and easy going. n = 2129	145	6.8	798	37.4	1189	55.8
Item 22 Is confident with other people. n = 2126	291	13.7	1044	49.0	794	37.3

Factor analysis was used to examine the structure of the ASBI data and to establish whether any clear underlying dimensions could be identified.[2] The results indicated the existence of five fairly robust factors. The items which loaded most strongly on these factors are shown in Table 1.14. These help to interpret the factors.

FACTOR 1: COMPLIANCE/CONFORMITY

The items which show the strongest relationship and thus help to define Factor 1 are:

Is obedient and compliant [3]
Waits his/her turn in games or other activities [8]
Co-operates with your requests [10]
Follows household or pre-school centre rules [15]

This can be interpreted as 'compliant or conformist behaviour'.

FACTOR 2: PRO-SOCIAL

The items which load most highly on Factor 2 are:

Is sympathetic towards other children's distress, tries to comfort others when they are upset [7]
Will join a group of children playing [13]
Asks or wants to go and play with other children [17]
Plays games and talks with other children [19]

It can be interpreted as indicative of a child's sociability and ability to empathise with the feelings of others.

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[2] Principal components, varimax rotated solution

Factor 3: Confidence/Independence

The items which load most highly on this factor are:

Is open and direct about what he/she wants [9]
Is confident with other people [22]

FACTOR 4: ANTI-SOCIAL

The items which load most highly on Factor 4 are:

Teases other children, calls them names [21]
Prevents other children carrying out routines [23]
Bullies other children [26]

Factor 4 can be interpreted as signifying aggressive or anti-social behaviour.

Factor 5: Anxiety

Only two items loaded on this factor and only one highly:

Gets upset when you don't pay enough attention [6]

It appears to indicate anxiety and a need for attention.

TABLE 1.4: FACTOR LOADINGS OF ASBI ITEMS AT ENTRY TO EPPE STUDY

	Compliance /conformity Factor 1	*Pro-social Factor 2*	*Confidence /Independence Factor 3*	*Anti-social Factor 4*	*Anxiety Factor 5*
ASBI Items	3* 5 8* 10* 15* 18 20	1 2 7* 11 12 13* 14 (-) 17* 19*	9* 22* 24 27 30	21* 23* 26* 29	6*
% of total variance accounted for by factor	**27.7**	**15.2**	**5.0**	**4.0**	**3.4**

* Factors with highest loadings (-) = negative loading

In all, 55.3 per cent of the total variation in children's ASBI ratings was accounted for by this five factor solution. Overall factor scores for four of the five dimensions identified were calculated for each child (as only one item loaded strongly for factor 5 this scale was excluded). These four measures provide a baseline at entry against which subsequent social and behavioural development can be assessed. Table 1.15 shows the range in children's factor scores and the correlation between children's scores on the different factors. It should be noted that higher scores on factors 1, 2 and 3 signify positive behaviour, whereas higher scores on factors 4 are indicative of negative behaviour.

TABLE 1.15: CHILDREN'S FACTOR SCORES AT ENTRY TO EPPE STUDY

i] Variation in Scores

		mean	*sd*	*min*	*max*
Factor 1 Compliance/Conformist	n = 2030	1.65	0.29	0.67	2.00
Factor 2 Sociability/Empathy	n = 2052	1.19	0.29	0.38	1.63
Factor 3 Confidence/Independence	n = 2088	1.43	0.29	0.59	1.78
Factor 4 Anti-Social	n = 2095	0.86	0.25	0.66	1.99

i] Correlations Between Factor Scores

	Factor 1	*Factor 2*	*Factor 3*	*Factor 4*	
Factor 1	1.00	0.469 n=1968	0.329 n=1994	-0.445	n=1998
Factor 2		1.00	0.708 n=2021	0.032	n=2019
Factor 3			1.00	0.094	n=2053
Factor 4				1.00	
Factor 5					

ns = not significant p>0.05

It can be seen that children's scores on factor 2 (sociability/empathy) and factor 3 (confidence/ independence) show the strongest positive associations (r=0.71. By contrast, as may be expected, scores on factor 1 (compliance/conformity) and factor 4 (anti-social) have a negative correlation (r= -0.45). Further detailed analysis of the ASBI entry assessments will be provided in a subsequent technical paper (No.7 Social and Behavioural development at age 3 to 4 years in Relation to Family Background).

• AGE AND ASBI FACTOR SCORES

In contrast to measures of children's cognitive development there was little evidence of relationships between children's age and their scores on the four ASBI factors. A very weak but non-significant positive correlation (r = 0.044, p 0.06) was found between children's scores on Factor 1 (compliance/conformity) and their age when the ASBI assessments were made. By contrast there was a very weak but significant negative correlation between scores on Factor 3 (confidence/independence) and age at ASBI (r = -0.072, p<0.01).

These results suggest that there is little evidencethat early years' workers assessments of children's social and behavioural development are related to children's age in months at the time of assessment. It is possible that workers may try to take into account children's age in making their judgements. Interestingly, the results suggest that age at entry to the target pre-school does show a significant association with children's social and behavioural development. Less time spent at the target pre-school (in terms of an older age at entry) showed a significant negative association withchidlren's scores on Factors 2, 3 and 4. Partialcorrelations between children's factor scores and age at entry to their target pre-school were calculated controlling for age at ASBI assessment. Children who entered their centre at an older age scored less highly (r = -0.176) in term of sociability/empathy, confidence/independence, (r = - 0.144) but also in terms of the anti-social factor (r = -0.122). There were no significant differences in terms of Factor 1 (conformity/compliance) however related to age at entry to the target pre-school.

- **LINKS BETWEEN BAS AND ASBI MEASURES AT ENTRY**

The correlations between children's entry assessments in terms of cognitive and social/behavioural dimensions are shown in Table 1.16. The results indicate that there are statistically significant associations between measures of children's social and behavioural development (as measured by factors 1, 2 and 3) and their cognitive attainments at entry to pre-school. Although these relationships are not strong (they are weaker than the correlations between, say, age and cognitive development, see Table 5 presented earlier) they are statistically significant. The strongest correlation is between Factor 2 (Sociability/empathy) and Total verbal score (r=0.27). By contrast, it should be noted that factor 4 (the Anti-Social dimension) shows no statistically significant relationship with cognitive attainment measured at entry to the study. The existence of associations between social behaviour and cognitive outcomes, of course, cannot indicate whether these relationships are causal, however. Thus we cannot say whether, for example, positive social behaviour promotes better cognitive attainment or vice versa. As a consequence it will be necessary to control for the entry measures in both the social/behavioural and cognitive domains when investigating later outcomes in either area. Multilevel analyses will be used to explore these relationships in later papers.

Previous research has suggested that only a small proportion of children who show behaviour difficulties at one time point continue to do so in subsequent years. Also that children may be rated differently by different assessors (Mortimore *et al* 1988). The extent to which behaviour assessments conducted on young children at entry to pre-school can help to identify children at risk of later difficulties at school will be an important focus of the longitudinal analyses of children's social and behavioural development across Key Stage 1 and will be reported in later papers in this series.

TABLE 1.16:CORRELATIONS BETWEEN CHILDREN'S SOCIAL BEHAVIOURAL AND COGNITIVE ATTAINMENTS AT ENTRY TO THE EPPE STUDY

	Factor 1	*Factor 2*	*Factor 3*	*Factor 4*
Block	0.184	0.147	0.103	-0.035ns
Picture Naming	0.202	0.227	0.199	-0.013ns
Picture Similarities	0.191	0.157	0.123	-0.043ns
Verbal Comprehension	0.229	0.255	0.214	-0.038ns
Total Non Verbal	0.221	0.178	0.133	-0.046ns
Total Verbal	0.238	0.265	0.230	-0.028ns
Total BAS Score	0.253	0.251	0.208	-0.037ns

ns = not significant p>0.05

- **GENDER AND ETHNIC DIFFERENCES IN SOCIAL AND BEHAVOURAL DEVELOPMENT**

A comparison of the ASBI factor scores for boys and girls indicates the existence of small but statistically significant differences ($p < 0.05$) in early years workers' assessments of the behaviour of the two groups for the three factors compliance/conformity, pro-social and confidence/independence, although it should be remembered that the vast majority of children of both sexes were positively rated (see Table 1.17).

TABLE 1.17:ASBI FACTOR SCORES AT ENTRY ANALYSED BY GENDER

	BOYS			*GIRLS*		
	n	mean	Sd	n	mean	sd
Factor 1 **Compliance / Conformity**	1060	1.61	0.30	970	1.70	0.28
Factor 2 **Pro-Social**	1071	1.15	0.29	981	1.23	0.29
Factor 3 **Confidence / Independence**	1092	1.41	0.30	996	1.46	0.28
Factor 4 **Anti-Social**	1097	0.86	0.25	998	0.85	0.24

Girls tended to be rated somewhat more favourably in terms of compliance/conformity and pro-social behaviour and confidence/independence.

By contrast to the findings concerning gender, no significant variation in overall mean factor scores were identified for children from the different ethnic groups in terms of early years workers' ratings of social and behavioural development at entry to the EPPE study. This is in contrast to the results of the analyses of cognitive attainment at entry described earlier in this section.

SUMMARY

Section 1 of this paper provides a description of some features of the EPPE child sample at entry to pre-school and details about their pre-school experience. Further analyses have been conducted to examine additional information relating to children's family and health background obtained from parent interviews. The next section reports the results of these preliminary analyses of children's attainments at entry in relation to the variables described here.

SECTION 2

This section of the working paper presents some information about the EPPE child sample derived from short parental interviews (lasting approximately 20 minutes on average) conducted after children were recruited to the study. It should be noted that most interviews were with children's mothers and usually took place at the child's pre-school centre, although for some working parents telephone interviews were found to be more convenient. All parents had already agreed to take part in the study and signed consent forms. The parent interviews were designed to obtain information about the child's health and care history, details of family structure and parents' educational and occupational backgrounds as well as some indications of parent-child activities and routines. Parents were assured of confidentiality and anonymity in the presentation of results.

72

In all, 2121 parent interviews have been conducted (representing data for 98.8% of the total child sample). The descriptive results reported in this section cover a number of key background indicators likely to be important in accounting for variations in children's attainments and adjustment at entry to pre-school.

FAMILY CHARACTERISTICS

Figures in Table 2.1 show that the vast majority of children lived with their mothers (98.7%) while around three quarters lived with their father. Only a tiny minority lived with their father only.

TABLE 2.1: CHILDREN'S FAMILY STRUCTURE

	n	%
Live with mother and father	1588	74.9
Lone parent live with mother	505	23.8
Lone parent live with father	16	0.8
Live with siblings	1605	75.7

n=2121

The majority of children lived with one or more siblings. An indication of family size is provided by the number of siblings and birth position. In all 46.7 per cent of children were first born with 34.6 per cent second born children in their families and only under one in five was born third or later (18.7%).

Figures in Table 2.2 indicate that just over a fifth of the sample were only children at this stage, while a little over a third had one sibling and 28 per cent two siblings. Only a small number (13.5%) were from large families (classified as 3 or more siblings at home, i.e. 4 plus children).

TABLE 2.2: NUMBER OF SIBLINGS

Siblings	n*	%
0	477	22.5
1	754	35.6
2	596	28.1
3	206	9.7
4	53	2.5
5	14	0.7
6 or more	14	0.7
No response	7	0.3

* n = 2121 n of missing parental interviews = 25

TABLE 2.3: PARENTS' MARITAL STATUS

Marital Status	n	%
Never married, lone parent	299	14.1
Never married, live with partner	299	14.1
Married, live with spouse	1290	60.8
Separated/divorced,lone parent	221	10.3
Widow/widower, lone parent	3	0.1
Other	8	0.4
No response	1	0

n= 2121

It can be seen that the majority (three fifths of children) lived with married parents, and around a quarter of children's mothers were separated/divorced or classified themselves as 'never married' and a 'lone parent'.

PARENTS' AGE GROUP

Overall, the mothers' reported age group was generally younger than that of father, although no details were given for over a fifth of fathers (in many cases these were absent parents). Very few mothers said they were under twenty years of age. The largestgroup were aged 26-35 years (60.5%) but a quarter of mothers were aged over 35. Details are shown in Table 2.4

TABLE 2.4 : PARENTS' AGE GROUP

	Mother		*Father*	
	n	*%*	*n*	*%*
16-20	19	0.9	-	-
21-25	255	10.6	56	2.6
26-35	1298	61.2	856	40.4
36-45	542	25.6	654	30.8
46-55	18	0.9	94	4.4
56-65	6	0.3	5	0.2
66-75	-	-	1	0.0
No response	13	0.6	454*	21.4

n= 2121 *often father absent

PARENTS' EDUCATION AND QUALIFICATIONS

TABLE 2.5: PARENT'S AGE ON LEAVING FULL TIME EDUCATION

	Mother		*Father*	
	n	*%*	*n*	*%*
16 or under	1042	49.1	842	39.7
17 years	233	10.8	108	5.1
18 years	295	13.9	201	9.5
19-20 years	123	5.8	72	3.4
21 years	132	6.2	128	6.0
21 plus - 26 years	219	10.3	213	10.0
Over 26 years	36	1.7	44	2.1
Not applicable	12	0.6	6	0.3
No response	29	1.4	507*	23.9

n = 2121 *often father absent

No information was given about father's age at leaving full time education for nearly a quarter of the sample, but the figure for mothers was under 2 per cent. More than a third (37%) of children's fathers were reported to have left school at age 16 years or under. For mothers, nearly half said they had left school at or before the age of 16 (in one case a mother reported never attending school in her country of origin). By contrast, 18 per cent of fathers and a similar proportion of mothers were 21 years or over when they left full time education.

In terms of highest qualifications, figures in Table 2.2 show that no information was reported for around a quarter of fathers compared with less than two per cent of mothers (in part, a reflection of the number of absent fathers and the fact that mothers were in nearly all cases the respondent). Around 18 per cent of mothers and 14 percent of fathers were reported to have no qualifications.

A substantially higher percentage of mothers' than fathers' highest qualification level was given as academic qualifications at ag 16 (eg GCSE or CSE or O level). Just under a fifth of mothers and a similar proportion of fathers had obtained either a degree or higher degree.

TABLE 2.6: PARENTS' QUALIFICATION LEVELS

	Mothers		Fathers	
	n	%	*n*	%
None	381	17.1	301	14.2
16 year vocational	35	1.4	18	0.9
16 year academic	801	38.0	485	22.9
18 year vocational	251	11.9	199	9.4
18 year academic	184	8.8	161	7.6
Degree or equivalent	294	13.7	274	12.9
Higher degree	109	5.1	127	6.0
Other professional	20	0.9	8	0.4
Other miscellaneous	23	1.2	18	0.9
N/A No response	23	1.8	525*	24.8

n = 2121 *often father absent

As noted earlier, the EPPE sample was not chosen to be nationally representative. Comparisons of the EPPE sample's parental information with those from a national sample of parents with a pre-school age child (Prior et al, unpublished) are reported in Technical Paper 4 (Melhuish et al, 1999a). These indicate that the EPPE sample is somewhat over represented in terms of the percentage of mothers with a degree or higher level qualifications. For fathers however, a higher percentage were recorded as having no or below GCSE level qualifications.

PARENTS' OCCUPATIONS

Table 2.7 gives details about parents' current employment status. As might be expected, because of their more usual assumption of child care responsibilities, proportionately far fewer mothers than fathers were in full-time employment (17% compared with 54%). Working mothers were more likely to be in part-time work (representing 31% of all mothers) and nearly half said they were not working or unemployed at present (46.5%). Of course it is possible that some mothers were working but in jobs in the 'invisible' economy and were unwilling to reveal this to interviewers. The equivalent figure for fathers was around 10 per cent, although again it should be noted that no information was given about fathers' work for over a fifth of the sample (a high proportion of these were absent fathers)

TABLE 2.7: PARENTS' CURRENT EMPLOYMENT STATUS

	Mothers		Fathers	
	n	%	*n*	%
Employed full-time	366	17.3	1145	54.0
Employed part-time	657	31.0	46	2.2
Self-employed	91	4.3	242	11.4
Not working	986	46.5	208	9.8
Combination (part-time and self-employed)	10	0.5	5	0.2
No response	11	0.5	475*	22.4

n = 2121 *often father absent

Mothers were asked about their main reason for not working if they indicated that they were not in paid employment at the time of interview. The results are shown in Table 2.8. They indicate that the majority of mothers of children in the EPPE sample were not seeking work. In most cases this was due to their role in looking after children. Only a small number reported that they were seeking work, or were studying or undertaking training.

TABLE 2.8: MOTHER'S REASON FOR NOT WORKING

	n	%
Not applicable (in paid work)	1114	52.5
Seeking work	28	1.3
Looking after children	810	38.2
Looking after relatives	6	0.3
In training/studying	54	2.6
Full time house person	17	1.5
Illness/disability	40	1.9
Other	30	1.4
No response	22	1.0

n = 2121

In terms of parents' occupational backgrounds, information was obtained about current or last occupation and whether their work involved supervising other people. Occupations were then classified using the Registrar General's Classification of Occupations and the results are shown in Table 2.9

It can be seen that no information was given for 23 per cent of fathers compared with 2 per cent of mothers. Broadly similar proportions of fathers were recorded as in skilled manual (IIIM), as in the managerial (II) categories, around a fifth in each group. By contrast, the largest group for mothers' occupations was the other non-manual (IIINM) category, followed by the managerial group II (non-manual). It is notable that very few respondents' jobs were classified as unskilled manual.

TABLE 2.9: PARENTS' OCCUPATIONAL STATUS

	Mothers		***Fathers***	
	n	%	*n*	%
Professional I	108	5.1	173	8.2
Managerial II	434	20.5	429	20.2
Non-Manual IIINM	808	38.1	268	12.6
Skilled Manual IIIM	108	5.1	450	21.2
Semi-Skilled Manual IV	429	20.2	262	12.4
Unskilled Manual V	78	3.7	37	1.7
Never Worked	114	5.3	16	0.8
No Response	42	2.0	486*	22.9

n = 2121 *often father absent

Technical Paper 4 (Melhuish et al, 1999a) examines the relationship between the occupational profiles of the EPPE sample's parents and those from a recent national survey (Prior *et al*, unpublished) and from official publications. The results suggest that the EPPE sample of mothers does not differ markedly from the national distribution of occupational status overall. In comparison with the national sample (Prior et al, unpublished) however, the EPPE sample has a higher representation of mothers from semi or unskilled manual occupations. This may reflect the focus of the EPPE study which sought to draw equal numbers of children from the four main types of pre-school provision in the study.

TYPE OF PRE-SCHOOL AND SOCIO-ECONOMIC BACKGROUND

An analysis of the educational and occupational backgrounds of the EPPE children's parents revealed evidence of significant differences according to type of pre-school attended. Clearly this in part reflects geographical access, knowledge, availability of places as well as parents' ability or willingness to pay for provision. Any comparisons of the impact of different types of pre-school provision on children's later attainment and progress need to acknowledge and control for differences in the characteristics of children entering different forms of pre-school provision.

Table 2.10 illustrates the differences in terms of mothers' qualification levels for the four main types of provision. It can be seen that proportionately fewer mothers whose children attended aplay group possessed a degree or higher level qualification (10.8%) than those whose children were at either a private day nursery (36.7%) or a local authority day nursery (17.9%). Also significantly fewer mothers of children in private nurseries reported that they had no qualifications (5.3%) compared with those whose children attended Local Authority day nurseries (27.6%).. (Of course these differences tend to reflect the purposes of Local Authority nurseries which tend to give priority places to 'at risk' and disadvantaged groups, but may also have places for other categories such as teachers' children).

TABLE 2.10: MOTHERS' QUALIFICATIONS BY TYPE OF PRE-SCHOOL CENTRE

Highest Qualification Level	*Nursery Class*		*Playgroup*		*Private Nursery*		*Local Authority Day Nursery*	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*
None	130	22.2	108	17.9	27	5.3	116	27.6
16 year old vocational or academic	264	45.1	290	48.0	163	31.8	119	28.3
18 year old vocational	67	11.6	77	12.8	42	8.2	65	15.5
18 year old academic	37	12.8	49	8.1	70	13.7	28	6.7
Degree or higher degree	75	13.2	65	10.8	188	36.7	75	17.9
Other	7	1.2	12	2.0	17	3.3	7	1.7
No response	5	0.9	3	0.5	5	1.1	10	2.4
	n = 585		n = 604		n = 512		n = 420	

The pattern of differences in parents' employment status between the different types of provision is also marked (see Table 2.11). Mothers with children in private nurseries, as might be expected, were more likely to be working full-timethan other mothers. Likewise they were more likely to report fathers in full-time work. Mothers whose children were at playgroup were more likely to report not working (54.7%). It should be noted that more mothers of children in Local Authority Day nurseries worked full time (over a fifth) reflecting the policy of making a proportion of places available to parents who can pay for such provision in these centres.

Under three in ten of fathers of children at Local Authority day nurseries were reported to be employed full-time (28.6%) and the no response figure was much higher for this group for fathers' (though not for mothers') employment status (46.1%), which is likely to reflect a significant difference in the proportion of absent fathers. The equivalent figures for no response regarding father's employment status were much lower for children attending either nursery classes or private day nurseries.

TABLE 2.11: PARENTS' CURRENT EMPLOYMENT STATUS BY TYPE OF PRE-SCHOOL PROVISION

a] Mothers

	Nursery Class		*Playgroup*		*Private Nurseries*		*Local Authority Day Nurseries*	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Employed Full-Time	71	12.1	62	10.3	139	27.2	94	22.4
Employed Part-Time	170	29.6	199	32.7	189	36.9	99	23.6
Self-Employed	19	3.3	23	3.3	37	7.2	12	2.9
Other combination	1	0.2	5	0.8	4	0.8	0	0.0
Not Working	320	54.7	314	52.0	140	27.3	212	50.5
No Response	4	0.7	1	0.2	3	0.6	3	0.7
	n = 585		**n = 581**		**n = 512**		**n = 420**	

n= 2121

ii] Fathers

	Nursery Class		*Playgroup*		*Private Nurseries*		*Local Authority Day Nurseries*	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Employed Full-Time	337	57.6	338	56.0	347	67.8	123	29.3
Employed Part-Time	20	3.4	12	2.0	6	1.2	8	1.9
Self-Employed	47	8.0	76	12.6	86	16.8	33	7.9
Other combination	1	0.2	5	0.9	0	0	0	0
Not Working	79	13.5	58	9.5	11	2.2	60	14.3
No Response*	101	17.3	116	19.6	62	12.1	196	46.7
	n = 585		**n = 604**		**n = 512**		**n = 420**	

*often father absent

Differences were also evident in the social class profile of parents' occupations for children recruited from different types of provision, as can be seen in Table 2.12. Around half the mothers of children in private nurseries were in professional/managerial occupations compared with only 15.5 per cent of those in playgroups. Likewise, a much higher proportion (57%) of fathers of children in private day nurseries were in professional/managerial work. Relatively more fathers of children in playgroups were in skilled manual employment.

TABLE 2.12: SOCIAL CLASS OF PARENTS' CURRENT OR LAST OCCUPATION BY TYPE OF PRE-SCHOOL PROVISION

a] Mothers

	Nursery Class		*Playgroup*		*Private Nurseries*		*Local Authority Day Nurseries*	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Professional & Managerial Non-Manual (I & II)	105	17.9	95	15.7	254	49.6	88	19.1
Other Non-Manual (III)	202	34.5	279	46.8	179	35.0	148	35.2
Skilled Manual (III)	32	5.5	31	4.6	22	4.3	23	5.5
Semi or Unskilled Manual (IV or V)	188	32.0	157	26.0	43	8.4	119	28.3
Never Worked	37	6.3	31	5.1	9	1.8	37	8.8
No Response	21	3.6	11	1.8	5	1.0	5	1.2
	n = 585		n = 604		n = 512		n = 420	

ii] Fathers

	Nursery Class		*Playgroup*		*Private Nurseries*		*Local Authority Day Nurseries*	
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Professional & Managerial Non-Manual (I & II)	138	23.6	114	18.9	286	55.9	64	15.2
Other Non-Manual (III)	86	14.7	76	12.6	63	12.3	43	10.2
Skilled Manual (III)	130	22.2	183	30.3	80	15.6	57	13.6
Semi or Unskilled Manual (IV or V)	117	20.0	113	18.7	21	4.1	48	11.4
Never Worked	3	0.5	3	0.5	0	0.0	10	2.4
No Response*	111	19.0	115	19.0	62	12.1	198	47.1
	n = 585		n = 604		n = 463		n = 420	

* often father absent

Previous research (for example, the National Child Development Study) has suggested that mothers' education is a good predictor of children's cognitive attainments at all stages of pupils' school careers. A simple comparison of the mean raw BAS scores at entry to the study of children whose mothers had different qualifications levels, confirms this relationship exists even amongst this very young sample of children (see Table 2.13).

TABLE 2.13: MEAN RAW BAS SCORES AT ENTRY BY MOTHERS' QUALIFICATION LEVEL

*Mothers' Occupational Level**	*Total BAS Score*		*Total Verbal Score*		*Total Non-Verbal Score*		
	mean	*sd*	*mean*	*sd*	*mean*	*sd*	*n*
None	43.4	13.1	26.3	8.2	17.0	6.8	347
16 year vocational	48.3	13.9	28.2	8.9	20.1	6.4	34
16 year academic	49.7	12.7	30.4	7.6	19.3	6.7	780
18 year vocational	49.5	12.0	30.5	7.3	18.9	6.1	245
18 year academic	51.9	14.01	31.3	8.8	20.5	6.9	176
Degree or equivalent	55.9	12.8	34.4	8.1	21.4	6.5	287
Higher degree	57.8	11.6	34.7	7.4	23.0	6.4	105

* Miscellaneous and no response excluded

The mother's occupational level (current or past) is itself correlated with educational qualification level and also showed a clear association with children's cognitive attainments. For example, Table 2.14 shows the mean raw scores for the main occupational categories. There are marked differences in the mean raw scores for children in descending order from professional non-manual (highest) to never worked (lowest). It should be noted that this comparison of mean raw scores does not control for differences in children's ages at entry to the EPPE study. Multilevel analyses reported in Section3 simultaneouly control for age and other background factors in studying children's attainments at entry to the study.

TABLE 2.14: MEAN RAW BAS SCORES AT ENTRY BY MOTHERS' OCCUPATIONAL LEVEL

*Mothers' Qualification Level**	*Total BAS Score*		*Total Verbal Score*		*Total Non-Verbal Score*		
	mean	*sd*	*mean*	*sd*	*mean*	*sd*	*n*
Professional Non-Manual (I)	56.8	11.9	34.9	7.7	21.9	6.5	106
Managerial Non-Manual (II)	54.8	12.5	33.5	7.8	21.2	6.4	424
Other Non-Manual (III)	50.1	12.8	30.6	7.8	19.5	6.6	791
Skilled Manual (III)	49.8	12.4	30.2	7.6	19.5	6.3	108
Semi-Skilled Manual (IV)	46.0	13.8	27.9	8.3	18.0	7.1	411
Unskilled Manual (V)	47.9	11.4	29.2	7.1	18.4	6.4	71
Never Worked	42.1	15.1	25.4	9.7	17.0	7.3	90
No Response	47.0	9.4	28.0	6.8	18.5	5.7	35

*Miscellaneous excluded

The analysis of fathers' educational and occupation levels likewise showed a clear association with children's cognitive scores at entry to pre-school. Given this, it is important that such measures of socio-economic and educational advantage (or disadvantage) are included in analyses of differences in the attainments and progress of children in different types of provision (because of the marked differences evident in the backgrounds of children they serve), as well as in the intakes to particular pre-school centres.

There are clear differences in the average BAS attainments of children according to mothers' self-reported marital status. These are likely to reflect, at least in part, differences in educational and occupational status. Figures in Table 2.14 show that children from the 'married living with spouse' category had the highest average total BAS scores (51.6) followed by 'never married living with partner' group (50.0). By contrast, the absence of a spouse/partner was associated with lower scores at entry to the pre-school study, those whose mothers had never married and were lone parents having the lowest average (45.9). Further analyses in Section 3 of this paper examine the impact of marital status in more depth.

TABLE 2.15 : MEAN RAW BAS SCORES AT ENTRY BY MOTHERS' MARITAL STATUS

*Mothers' Marital Status**	*Total BAS Score*		*Total Verbal Score*		*Total Non-Verbal Score*		
	mean	*sd*	*mean*	*sd*	*mean*	*sd*	*s n*
Never married –lone parent	45.9	12.5	28.0	7.4	17.8	6.7	292
Never married – living with partner	50.0	13.0	30.5	7.6	19.5	6.8	294
Married living with spouse	51.6	13.3	31.4	6.7	20.0	6.7	1277
Separated/Divorced, lone parent	47.2	14.1	28.8	8.6	18.5	7.1	213

* Widow/Widower and other excluded (n=11)

CHOICE OF PRE-SCHOOL CENTRE

Parents were asked about the reasons why they chose their child's particular pre-school centre. The main reason given was related to access (nearest to home) mentioned by 39 per cent, followed by personal recommendation/reputation (30.6%). Previous experience of a centre was also important for a sizable group of parents where an older sibling attended (or in the past attended) a centre. Only a minority specifically mentioned the atmosphere of their child's pre-school centre (17%) and around one in twenty specifically cited aspects of educational provision of their chosen centre (5.9%) as important in their choice. Table 2.16 gives details.

TABLE 2.16 : REASONS GIVEN FOR CHOOSING THEIR CHILD'S PRE-SCHOOL CENTRE

	n	%+
Nearest to home	833	39.3
Recommendation of others/reputation	648	30.6
Older sibling already attends/attended	624	29.4
Atmosphere	357	16.8
Educational environment	126	5.9
Type of place available (PT/FT)	53	2.5
Cost	51	2.4
Early age of entry possible	18	0.9
Other	313	14.8

* n = 2121

+ it was possible to cite more than one reason therefore totals do not sum to 100 per cent.

There were variations according to type of pre-school provision in the reasons parents (respondents were nearly always mothers) gave for choosing a particular pre-school centre. For example, 46 per cent of those whose children attended private day nursery cited educational reasons for their choice compared with figures of 26 per cent for nursery classes, 18 per cent for play groups and under 10 per cent for Local Authority Day Nurseries. Atmosphere was also much more frequently cited by parents who chose a private day nursery. Previous experience through attendance of an older sibling was more commonly reported by parents whose children were in nursery classes (42%) or a play group (34%).

Accessibility (nearness to home) was also more frequently cited by those with children in nursery classes (34%) and playgroups (28%). Recommendation/Reputation was equally cited by parents whose children attended playgroups, private day nurseries and Local Authority Day nurseries, but was less commonly reported by those with children in nursery classes.

SUMMARY

Section 2 of this paper provides some simple descriptive results of analyses of parent interview data for over 98 per cent (2121) of children in the EPPE sample at entry to the study. It demonstrates in terms of selected measures the existence of marked differences in the family characteristics of children attending different types of centres and the existence of significant associations between parents' educational and occupational levels and children's attainments at entry to pre-school. The findings also suggest that there are important variations in patterns of access to, and use of, different kinds of pre-school provision. These variations may have implications for policies concerned with the combatting of social disadvantage and exclusion. For example, the EPPE data suggest that for only a minority of families is the use of pre-school provision clearly associated with mothers' full-time participation in the labour market. This is likely to reflect a complex mix of choice, other child care commitments for siblings and the limitations imposed by the part-time and in some instances inflexible nature of much pre-school provision, as well as ability to pay for certain kinds of provision and geographical access to centres.

SECTION 3

Section 3 of this paper presents the results of multilevel analyses of the Effective Provision of Pre-School Education (EPPE) child sample at entry to pre-school education. These analyses seek to provide a contextualisation of children's initial cognitive attainments and social behavioural development as a baseline for later assessment of progress across the pre-school period.

The analyses presented in this paper examine children's scores in terms of the baseline cognitive assessments made at entry to pre-school centres (BAS scores) and measures of their social behavior derived from pre-school centre carers' ratings using the Adaptive Social Behaviour Inventory (ASBI). The findings reported here provide important evidence concerning the impact of young children's personal, family and home environment characteristics at entry to the EPPE study.

THE ROLE OF MULTILEVEL MODELS

Multilevel models provide a method of exploring the extent of variation in children's attainments (or other social or behavioural measures) which can be attributed to differences between individual children, and also the extent which such variation is related to differences between group attributes such as the area in which they live or the institution (in this case the pre-school centre) they attend.[1] For the EPPE project multilevel models allow the variation in children's entry assessments to be analyzed in terms of centre and child level variation. These models also allow the extent of differences related to particular child characteristics (e.g. age, gender, ethnic group, language background) to be explored. In addition, these models enable any systematic differences related to children's social and family characteristics.

A variety of models were explored

- child characteristics
- parent characteristics
- parent and child characteristics
- home environment
- pre-school experience (quantity)
- final model
  (parent, child, home environment and pre-school experience)

RESULTS: OVERALL COGNITIVE ATTAINMENT

Two-level models (children grouped by pre-school centres) were employed for the analysis of EPPE baseline data. The multilevel models reported are based on a sample of 2059 children for whom full BAS data were collected, drawn from 114 pre-schoolcentres In all,85 children were omitted due to missing total BAS scores, and two due to missing data relating to age at BAS or age at entry to their target centre. Details of the final model are shown in Appendix 2.1.

In addition to the main analysis of total BAS score, multilevel models were also tested using total non-verbal score at entry to the study as the dependent variable. These models are based on a slightly larger sample (n=2099) because a small number of children (40) often with English as an additional language, only completed the two non-verbal baseline assessments. The results for the non-verbal analysis are reported separately in Appendix 2.2.

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[1] Multi-level models are a generalised form of regression analysis, particularly suited to the study of educational and social data exhibiting a hierarchical structure (Paterson and Goldstein, 1991, Golstein, 1995)

PRE-SCHOOL CENTRE DIFFERENCES

Table 3.1 indicates that over a quarter (25.9%) of the variation in children's total BAS scores was attributed to systematic differences between pre-schoolcentres, while the majority (nearly three-quarters) reflected differences between individual children . These proportions are in line with studies of older age groups at primary school age (seeMortimore et al, 1988, Sammons & Smees, 1998 for example).

TABLE 3.1: VARIATION IN CHILDREN'S TOTAL BAS SCORES AT ENTRY TO THE EPPE STUDY (NULL MODEL)

	Estimate	*SE*	*%*
Pre-school centre level variation	45.05	6.968	25.9
Child level variation	128.70	4.128	74.1
Intra-centre correlation	0.259		

n = 114 centres, 2059 children

CHILD CHARACTERISTICS

Further analyses were conducted to establish the impact of specific child characteristics (age, gender, ethnic group, language background etc). Each measure was tested both individually and in combination. The results of the separate testing of each measure are shown inTable 3.2 These illustrate the reduction in overall variation in total BAS scores attributed to each measure individually. In addition, Table 3.2 reports the intra centre correlation in each case. This gives an indication of the proportion of unexplained variance (i.e. that not attributable to the measures tested) which lies between pre-school centres rather than between individual children. It can be seen that one factor - child's age in months shows a stronger relationship tocentre level variation in total raw BAS score than other factors.This reflects the different policies on age at which children children are eligible to enter some centres

TABLE 3.2: PERCENTAGE OF VARIANCE IN TOTAL BAS SCORES ACCOUNTED FOR BY SPECIFIC MEASURES TESTED INDIVIDUALLY AND INTRA CENTRE CORRELATION (CHILD VARIABLES)

	% total variation accounted for by factor	*Intra-centre correlation*
Gender	1.00	0.260
Age in months at BAS testing	16.00	0.175
Ethnicity	5.49	0.236
First language	3.65	0.249
Age at entry to target pre-school	2.17	0.244
Number of languages spoken	2.12	0.250
Number of siblings	0.85	0.256
Birth position	0.34	0.257
Premature	0.42	0.259

n of children =2059 n of centres = 114

Having tested the nine child variables individually to establish their relationship with children's total BAS scores at entry to the EPPE study, these variables were tested in combination to establish the relative strength and net impact of different factors and to provide a contextualised analysis of children's overall cognitive performance at entry (the baseline against which cognitive progress over the pre-school period can be assessed after the sample move on to reception classes).

Table 3.3 summarises the results of testing each of these child characteristics simultaneously using total BAS score as the outcome (dependent) measure. The key points emerging from this contextualised analysis are summarised below.

- girls show significantly higher attainment in overall cognitive attainment when the impact of other factors is controlled.

- older children also attain more highly than others (reflecting the known relationship between cognitive development and maturity). Age at BAS assessment has a marked impact on the estimate of pre-school centre level variation, reflecting differences between centres (and especially types of provision) of children's average age at entry.

- children from large families (3 or more siblings) had significantly lower overall cognitive attainments at entry to pre-school, although birth position was not important when control for other measures was made.

- pre-maturity (37 weeks or fewer at birth) showed a negative association with cognitive attainment when other child factors are included in the model.

- older age at entry to the target pre-school also was found to have a significant negative impact when tested in combination with other child factors. [1]

- children whose first language is not English showed significantly lower overall cognitive attainments.

- ethnic group also shows a significant relationship with cognitive performance. The groups with statistically significantly lower attainments in terms of total BAS score after control for other child characteristics are: Black African, and Pakistani. [2]

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[1] As noted in the preliminary analyses reported in Section 1 when tested individually, older age at entry is associated with higher scores. However, it must be remembered that age at BAS assessment and age at entry to target pre-school are themselves correlated ($r=0.689$) because many children enter at age three years or over and are assessed within 10 weeks. When age at BAS assessment and other factors are controlled, the results of the child model indicate that older age at entry to the target pre-school is associated with lower scores: in other words, children who enter their target pre-school at a younger age show better cognitive attainments at age three plus than those who are relatively older at entry. This may indicate that earlier entry to pre-school can be associated with a beneficial impact on cognitive development.

2. However, it should be noted that no control has been make in this analysis for parents' educational level or other socio-economic factors known to impact on attainment (these will be discussed later in section 3).

TABLE 3.3: RESULTS OF THE MULTILEVEL ANALYSIS OF CHILD CHARACTERISTICS

Measures	*Tested Individually*	*Tested in Combination*
Age at BAS (centred around mean age)	+	+
Age at entry to target pre-school (centred around mean age)	+	-
Gender (compared with boys)	+ girls	+ girls
Ethnicity (compared with white UK)	- black African - Indian - Pakistani - Mixed Heritage - Other	- black African - Pakistani
Number of languages spoken (compared with one)	- 2 or more	ns
First language (compared with English)	- not English	- not English
Number of siblings (compared with none)	- 3 or more	- 3 or more
Birth position (compared with first)	- 4 or later	ns
Prematurity (compared with full term)	- Premature (37weeks gestation or less)	- premature

+ statistically significant positive relationship $p<0.05$
- statistically significant negative relationship $p<0.05$
ns not significant

The inclusion of child characteristics accounted for over a quarter (27.1 per cent) of the total variation in children's total BAS scores at entry as can be seen in Table 3.4. In terms of the variation between pre-school centres in children's total BAS scores the model accounted for nearly two thirds of the centre-level variation (64.7%). These results are in line with those identified in studies of primary schools and demonstrate the vital importance of including information about the background characteristics of individual children in order that proper account is taken of pre-existing intake differences between pre-school centres and by type of provision before any comparisons of children's outcomes.

TABLE 3.4: VARIATION IN CHILDREN'S TOTAL BAS SCORES AT ENTRY TO EPPE STUDY (CHILD MODEL)

	Estimate	*SE*
Pre school centre level variation	15.89	2.965
Child level variation	110.80	3.552
Intra-Centre correlation	0.125	

Reduction in total variance	*27.08%*
Reduction in centre level variance	64.73%

n= 114 centres n=2059 children

Table 3.4 shows that the child characteristics model (reported in Tables 3.2 and 3.3) accounts for a significant percentage of the total variance in children's baseline BAS assessment at entry to the study. Controlling for the relationship between child variables and BAS scores has a particularly strong impact on the extent of centre-level variance accounted for, the intra-centre correlation for the child model being only 0.125

AMOUNT OF PRE-SCHOOL PROVISION EXPERIENCED

Further analyses were conducted to explore the impact of number of sessions attended by the child at their target pre-school centre on baseline scores. This model controlled for children's age at BAS assessment, number of sessions attended per week and age the child started at their target pre-school. The results indicated that children who had more pre-school experience (in terms of starting at a relatively young age in months) than average, and those who attended for a higher number of sessions a week had better cognitive attainments than others at entry to the study. There were no significant differences between those experiencing 7 to 9 or 10 sessions a week. However, those experiencing 4 to 6 sessions a week showed significantly lower attainments, and those experiencing only 2-3 sessions a week had the lowest attainments.

TABLE 3.5 : VARIATION IN CHILDREN'S TOTAL BAS SCORES AT ENTRY TO EPPE STUDY (PRE SCHOOL EXPERIENCE MODEL)

	Estimate	*SE*
Pre-school centre level variation	24.39	4.175
Child level variation	118.40	3.796
Intra centre correlation	0.1708	

Reduction in total variance	17.82%
Reduction in centre variance	45.86%

n = 114 centres n = 2059 children

HOME ENVIRONMENT

A variety of measures relating to children's home environment were collected during the parent interview. Tables 3.6 and 3.7 shows the results from the multilevel testing of links between these and children's total BAS scores at entry to their target pre-school. The results suggest that items which show a statistically significant association with higher cognitive attainments relate to parents' involvement in pre-reading and reading related activities and to singing (eg. nursery rhymes, songs etc).

Children whose parents often taught them songs, rhymes, letters/numbers, read to them frequently and took them to the library had significantly higher cognitive attainments at entry to the EPPE study (age 3+ to 4 years) than other children. It should be noted that this model does not control for parents' educational and occupational characteristics, further analyses are reported later which examine this aspect.

TABLE 3.6 : PERCENTAGE OF VARIANCE IN TOTAL BAS SCORES ACCOUNTED FOR BY SPECIFIC MEASURES TESTED INDIVIDUALLY AND INTRA CENTRE CORRELATIONS (HOME ENVIRONMENT VARIABLES)

	% total variance accounted for by factor	*Intra-centre correlation*
Regular bedtime	1.17	0.255
Rules for watching TV	0.93	0.258
Frequency watching TV	ns	not tested
Frequency child has friends home to play	1.84	0.251
Frequency child plays with friends elsewhere	1.13	0.255
Frequency child goes shopping with parent	ns	not tested
Frequency child visits friends with parent	ns	not tested
Frequency family meals	0.79	0.256
Frequency child read to by parent	6.95	0.238
Frequency child taken to library	10.99	0.246
Frequency child plays with letter/numbers	1.73	0.266
Frequency child paints	1.29	0.255
Parents' emphasis on teaching alphabet	4.05	0.250
Parents' emphasis on teaching numbers	2.01	0.255
Parents' emphasis on teaching songs, poems, nursery rhymes	5.50	0.242

The results in Table 3.7 show that although associated with a small effect when tested individually, aspects of the home environment related to rules, TV viewing and playing with friends did not show a significant link with overall cognitive attainment at entry to the study, when other factors are included in the multilevel model.

TABLE 3.7: RESULTS OF THE MULTI LEVEL ANALYSES OF HOME ENVIRONMENT CHARACTERISTICS

	Tested Individually	*Tested in Combination*
Regular bedtime	- no	ns
Rules for TV	- no	ns
Frequency of watching TV	ns	ns
Frequency child has friends to play at home weekly (compared with less than once per week)	+ (1-4)	ns
Frequency child goes shopping with parent (compared with less than once per week)	ns	not tested
Frequency child visits friends/relatives with parents	ns	not tested
Frequency child read to (compared with less than once a week)	+once a week +several times a week +daily +twice a week	+several times a week +daily +twice a week
Frequency go to library (compared with no visits)	+special occasions +once a month +once a fortnight +once a week	+special occasions +once a month +once a fortnight +once a week
Frequency letters/number played with (compared with none or less than once a week)	+ 1 - 4 times a week + 5 - 7 times a week	+ 5-7 times a week
Parent teaches alphabet (compared with none)	+some +a lot of emphasis	+1-4 times a week +5-7 times a week
Parent teaches numbers (compared with none)	+some +a lot of emphasis	ns
Parent teaches songs, poems, nursery rhymes (compared with none)	+some +a lot of emphasis	+ a lot of emphasis

In combination the home environment measures accounted for a significant percentage (25.6%) of the total variance in children's BAS attainments at entry to the target pre-school, as can be seen in Table 3.8.

TABLE 3.8: VARIATION IN CHILDREN'S TOTAL BAS SCORES AT ENTRY TO EPPE STUDY (HOME ENVIRONMENT MODEL)

	Estimate	*SE*
Pre school centre level variance	33.50	5.333
Child level variance	114.30	3.666
Intra-centre correlation	0.227	
Reduction in total variance	25.64%	
Reduction in centre level variance	14.94%	

PARENT CHARACTERISTICS

A variety of measures related to parents' educational, occupational and marital status were collected at interview. Multilevel models were used to examine the impact of factors related to parents' educational and occupational background on children's total BAS scores at entry to the study. Tables 3.9 and 3.10 summarize the results.

TABLE 3.9: PERCENTAGE OF VARIANCE IN TOTAL BAS SCORES ACCOUNTED FOR BY SPECIFIC MEASURES TESTED INDIVIDUALLY AND INTRA CENTRE CORRELATIONS (PARENT VARIABLES)

	% total variation accounted for by factor	*Intra centre correlation*
Mother's Age at leaving full-time education (compared with left at 16 years)	6.95	0.239
Father's Age at leaving full-time education (compared with left at 16 years)	5.70	0.233
Mother's highest qualification level (compared with none)	8.97	0.229
Father's highest qualification level (compared with none)	7.72	0.222
Father's employment status (compared with employed full time)	3.78	0.238
Mother's employment status (compared with employed full time)	2.12	0.249
Social class of mother's occupation (compared with Professional non-manual class 1)	7.39	0.230
Social class of father's occupation (compared with Professional non-manual class 1)	6.44	0.225
Marital status (compared with married living with father)	1.75	0.249

TABLE 3.10: RESULTS OF MULTILEVEL ANALYSES OF PARENT CHARACTERISTICS

	Tested Individually	*Tested in Combination*
Mother's education (compared with left at age 16)	+All	removed from final model as mother's qualification a stronger relationship
Father's education (compared with left at age 16)	+All	removed from final model as mother's qualification a stronger relationship
Mother's qualification level (compared with none)	+All	+
Father's qualification level (compared with none)	+All	removed from final model as mother's qualification a stronger relationship
Mother's occupation (compared with employed full-time)	- not working/unemployed	ns
Father's occupation (compared with employed full-time)	- not working/unemployed	-
Social class of Mother's occupation (compared with professional non manual class 1)	-	Removed from final model as father's social class a stronger relationship when mother's qualification included
Social class of Father's occupation (compared with professional non manual class 1)	-All	-
Marital status (compared with married living with father)	- single lone parent - separated/ divorced lone parent	ns

These demonstrate that the measures of parents' educational background (highest level of qualification) showed the strongest association with children's total BAS scores at entry to the project. Also the variables related to father's occupational status were better predictors than those related to mother's occupational status when mother's highest qualification was included in the combined model.

It is notable that although parent's marital status showed a significant relationship when tested independently, it was not found to be a significant predictor of children's overall cognitive attainments at entry to pre-school when tested in combination. This suggests that lone parent status is less relevant than the impact of socio-economic factors such as parent's educational and occupational backgrounds.

Due to the close associations between many of these measures only a limited set were retained in the final parent multilevel model. The final parent model indicated that, in combination, variables related to mother's highest level of qualification, father's employment status and father's social class of occupation accounted for a significant percentage of the total variance in children's total BAS scores at entry (11.1%) and over a quarter (25.8%) of the pre-school centre level variance. Children whose mother's had higher degrees or degree level qualifications showed the most advantage in performance, though all qualification levels except 16 year old vocational showed a positive relationship. By contrast, those whose fathers were not working/unemployed had significantly lower scores. The results suggest that children whose fathers were in semi or unskilled manual work also had poorer total BAS scores than those whose fathers were in professional or managerial occupations (Class I and II). [1]

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[1] When age at BAS is controlled in the model the impact of social class of fathers occupation was found to be highly statistically significant.

TABLE 3.11: VARIATION IN CHILDREN'S TOTAL BAS SCORES AT ENTRY TO EPPE STUDY (PARENT MODEL)

	Estimate	*SE*
Pre-school centre level variance	33.41	5.377
Child level variance	121.0	3.880
Intra-centre correlation	0.216	
Reduction in total variance	11.03 %	
Reduction in centre level variance	25.77 %	

It can be seen that in comparison with the Home Environment Model the Parent Model accounts for less of the total variance but more of thecentre level variance in children's total cognitive attainment at entry to the study. In order to establish thebest contextualisation of children's baseline attainment at entry, further analyses were conducted to establish the impact of parent, child and home environment characteristics when analysed in combination.

PARENT AND CHILD CHARACTERISTICS

Multilevel analyses were used to explore the combined impact of child and parent characteristics simultaneously. The results indicated that 11 variables are statistically significant predictors of total cognitive attainments at entry to the study. The results are summarised in Table 3.12

TABLE 3.12: RESULTS OF MULTILEVEL ANALYSES OF PARENT AND CHILD VARIABLES

Child Measures	*Tested in Combination*
Age at BAS in months	+
Age at entry to target pre-school in months	-
Gender (compared with boys)	+ girls
Ethnic group (compared with white UK)	- Black African - Indian - Pakistani - Mixed Heritage
First language (compared with English)	- not English
Number of siblings (compared with none)	- (3 plus siblings)
Prematurity (compared with full term)	- (37 weeks or under)
Parent Measures	
Mother's highest level of qualification (compared with none)	+ 16 academic + 18 vocational + 18 academic + Degree + Higher Degree + Other Professional + Other Misc.
Father's employment status (compared with employed FT)	- Self employed - Employed PT - Not working/ Unemployed
Social Class of Father's occupation (compared with Professional non manual class 1)	- Class III non-manual - Class IV semi skilled manual - Class V unskilled /manual
Number of sessions attended per week (compared with 10 sessions)	- 2-3 sessions per week

This combined model (Parent and Child) accounted for 39 percent of the total variance in children's total BAS scores at entry and over 90 per cent of the centre level variance (see Table 3.13).

TABLE 3.13 : VARIATION IN CHILDREN'S TOTAL BAS SCORES AT ENTRY TO EPPE STUDY (PARENT AND CHILD MODEL)

	Estimate	*SE*
Pre-school centre level variance	4 .065	1 .303
Child level variance	101 .70	3 .257
Intra centre correlation	0 .0384	
Reduction in total variance	39 .13%	
Reduction in centre level variance	91 .00%	

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THE FINAL MODEL - PARENT, CHILD AND HOME ENVIRONMENT

Further analyses were conducted to examine the combined impact of variables related to child and parent characteristics and measures of the home environment. The final model demonstrates that measures from each of these three main categories are statistically significant predictors of young children's total cognitive attainment at entry to the study. The combination of these three groups of explanatory variables achieves a statistically significantly better model fit and thus provide a better baseline contextualisation of cognitive attainment.

CHILD CHARACTERISTICS

Of the child variables, age at BAS assessment remained highly significant with older children showing higher scores. Also children's age at entry to the target pre-school remained significant with older age at entry showing a negative relationship, suggesting that taking account of other factors, (child, parent and home environment) earlier entry to pre-school may be associated with a beneficial impact upon cognitive development. The negative link between later age at entry and total BAS scores was not removed by the inclusion of socio-economic or home environment measures derived from the parental interviews. It should also be noted that type of pre-school centre was not significant in the model and thus this factor does not explain the relationship identified.

After control for other factors the ethnic differences in attainment were much reduced, though children of Black African, Pakistan and Mixed heritage showed significantly lower total baseline scores than White children. Children whose first language was not English also had significantly lower attainments. However, it should be noted that in the comparable multilevel analysis of children's **non verbal** attainment at entry to the study, ethnic differences in cognitive scores are not statistically significant when other factors are controlled (see Appendix 2.2). This indicates that, for children of minority ethnic backgrounds, the verbal component of the BAS may be a less appropriate measure of cognitive abilities.

There was a significant negative impact associated with prematurity, (children born at 37 weeks or below). Children from larger families (three or more siblings) also showed significantly lower total BAS scores. Gender was also found to have a significant link with total BAS scores, girls attaining higher scores than boys at entry to the study, controlling for other factors.

HOME ENVIRONMENT

A number of measures related to the home environment in the final model demonstrated an independent effect on young children's total BAS scores at entry to the study. Frequency with which parents reported reading to their child was significant, those who read twice a day showed the most positive impact, though reading daily or several times a week also showed a positive relationship in comparison with reading less than once a week. Reported frequency of taking the child to the library also had a significant positive effect, with weekly visits showing the strongest relationship. Children whose parents reported that their child frequently played with letters or numbers also showed higher scores, as did those who reported that they taught their children the alphabet, and those who taught a variety of songs (poems and nursery rhymes) to their children. It should be noted that the impact of these aspects of the home environment remain significant **after** controlling for parents' education and occupational status.

PARENTS

Children whose mothers had higher qualification levels were at an advantage in terms of overall cognitive attainment at entry, as were those whose fathers were in professional or managerial work

94

manual (Class IV or V). This suggests that such measures of social disadvantage/advantage have an independent impact on children's cognitive attainment not attributable to differences in the home environment measures described above.

AMOUNT OF PRE-SCHOOL EXPERIENCE

The baseline models provide some evidence that children who attended for more sessions per week had higher cognitive attainment at entry than others. It should be remembered that a substantial number of children (70%) entered their target pre-school at age 30 months or under. This suggests that, having controlled for other factors (child, family and home environment) children who have a greater amount of pre-school experience (attending for more sessions) appear to have higher cognitive scores at entry and is in line with the findings concerning age at start at the target pre-school.

The final multilevel model demonstrates that information relating to children's personal and family characteristics, their parents' educational and occupation status and their home environment show statistically significant relationships with overall cognitive attainments at entry to the study. The results are summarised in Table 3.14.

TYPE OF PRE-SCHOOL AND REGION

The multilevel model was extended to establish whether type of pre-school or region showed a relationship with cognitive performance after controlling for intake characteristics. The results showed no statistically significant impact for pre-school type or for region suggesting that good control for intake has been achieved. The final contextualised model should thus provide a sound basis for future study of children's progress over the pre-school period.

TABLE 3.14: VARIATION IN CHILDREN'S TOTAL BAS SCORES AT ENTRY TO EPPE STUDY (FINAL MODEL)

	Estimate	*SE*
Pre-school centre level variance	4.236	1.275
Child level variance	94.680	3.034
Intra-centre correlation	0.043	
Reduction in total variance	43.07 %	
Reduction in centre level variance	90.60 %	

Table 3.14 shows that the combination of child, parent and home environment variables accounts for a substantial proportion of the total variance in children's total BAS scores at entry to the study (43.1%). Moreover, it is clear that, in terms ofcentre level variance, the model accounts for over 90 per cent of the differences between centres in children's achievement. This is important in ensuring that adequate control is made for differences between centres in their child intakes in later comparisons of children's progress.

SUMMARY AND CONCLUSIONS

The results of the multilevel analyses of the EPPE child sample's assessments at entry to the study reveal the significant impact of background factors on cognitive attainment at entry. These have important implications for the promotion of equity in pre-school education and demonstrate the existence of powerful pre-existing inequalities in cognitive attainment at an early age (three to four years).

years).

There is evidence that gender, age (younger children) and a first language other than English were related to lower cognitive attainments at entry to the EPPE study. There was also some evidence of ethnic differences in overall cognitive attainment at entry, although these are much reduced when account is taken of differences in parents' educational and occupational backgrounds and characteristics of the home environment (interestingly control for such factors revealed no significant ethnic differences in non-verbal attainment). Nevertheless, parents' educational and occupational status are significant determinants of cognitive attainment but aspects of the home environment remain important and exert an independent and measurable effect.

The contextualised multilevel analyses suggest the existence of some differences also in relation to age at entry to the target pre-school and sessions of attendance which are of policy and practitioner interest. They suggest that more pre-school experience may have a beneficial impact on the overall cognitive development of young children. This association is identified when account is taken of the significant influence of other factors (child, parent and home environment).

It is important to note that the contextualised analyses presented here suggest the existence of significant pre-school centre level variance in children's baseline assessments (both cognitive and non-cognitive). This demonstrates the need to control for intake differences in the characteristics of children provided for in any comparisons of centres' effects on children's progress and development. An important aspect of the project will be to establish whether the centre level variance increases or decreases over the period under study. It might be anticipated that variance could increase (reflecting differences in quantity and quality of provision and experience) both between centres and according to type. However, it may be that pre-school operates as an equalising influence and that variance decreases. It will also be of considerable relevance to establish whether certain groups (particularly those with low entry scores or fromsocio-economically disadvantaged backgrounds) make greater progress with particular kinds of provision or in particular centres.

Table 3.15 summarises the results of the different multilevel models used in the baseline analysis. It shows the percentage of total variance accounted for by different multilevel models reported in this section.

TABLE 3.15: CONTEXTUALISED MULTILEVEL ANALYSIS OF TOTAL BAS SCORES COMPARISON OF DIFFERENT MODELS

Model +	*% total variance accounted for by model*	*% total variance attributed to Centre level*	*Intra centre correlation*
1. **Uncorrected Multilevel Model** (Null model)	0*	25.93	0.259
2. **Child background variables only**	27.08	9.15	0.125
3. **Parent variables only**	11.13	19.23	0.216
4. **Home Environment**	25.64	19.28	0.227
5. **Parent and child**	39.13	2.34	0.034
6. **Fully Contextualised Model** (parent, child, home environment variables, hours of provision)	42.73	2.41	0.043

n of centres = 114
n of children = 2059
*no control for any explanatory measures. + Details of the models used can be found in *Note 1*

It can be seen that the inclusion of child and parent measures accounts for a substantial percentage of the total variance in children's BAS scores at entry. Moreover, control for both child and parent the model fit improves. The final model accounts for nearly 43 per cent of the total variance in children's total BAS scores at entry to the study and only 2.4 per cent of the total variance is attributed to the centre level in this analysis.

These findings are important because they demonstrate that the EPPE database is providing good control for relevant background characteristics of children at entry to the study. This suggests that subsequent analyses of any centre level variance in children's later outcomes (i.e. at transfer to reception classes) can be interpreted securely in the knowledge that the baseline controls of intake differences are robust. Furthermore, the absence of significant differences according to type of pre-school provision or region, after control for child, parent and home background factors, likewise indicates that later comparisons of rates of children's progress in different types ofcentre can be conducted in the knowledge that the impact of prior existing intake differences do not account for later variations in outcomes.

The modeling strategy is of theoretical interest because it identifies and separates the relative contribution to young age (3 plus) children's cognitive attainments at pre-school of a range of factors relating to child and family characteristics, parents' educational and occupational status, and measures of home environment.

NOTE 1 VARIABLES TESTED IN COMBINED MULTILEVEL MODELS

Model 1 (Null Model)

No explanatory variables

Model 2 (Child Model)

Child variables
- Age at BAS
- Gender
- Ethnic group
- First Language
- Age at entry to Pre-school
- Number of Siblings
- Pre-maturity

Model 3 (Parent Model)

Parent variables
- Mother's highest qualification level
- Social class of Father's occupation
- Father's employment status

Model 4 (Home Environment Model)

Home Environment variables
- Frequency parent reads to child
- Frequency child taken to library
- Frequency child plays with letters/numbers
- Parents' emphasis on teaching alphabet/letters
- Parents' emphasis on teaching songs/poems/nursery rhymes

Model 5 (Parent and Child Model)

Parent and Child variables
- Age at BAS
- Gender
- Ethnic group
- First Language
- Mother's qualification level
- Father's employment status
- Social class of father's occupation
- Age at entry to Pre-School
- Number of Siblings
- Pre-maturity

Model 6 Final Model Full Contextualised Model

Child, parent and home environment variables as above
- Amount of provision (sessions per week)

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APPENDIX 1

I Type of Pre-School Provision by Child and Ethnic Group

Ethnic Group	*Nursery classes*		*Playgroup*		*Private Day Nursery*		*Local Authority Day Nursery*	
	N	%	n	%	n	%	n	%
UK White n=1655	471	28.5	482	29.1	460	27.8	242	14.6
Mixed n=139	27	19.4	38	27.3	16	11.5	58	41.7
White European n=88	22	25.0	21	23.9	27	30.7	18	20.5
Black Caribbean N=74	13	17.6	9	12.2	4	5.4	48	64.9
Black African N=48	10	20.8	12	25.0	0	0.0	26	54.2
Indian N=31	4	12.9	16	51.6	6	19.4	5	16.1
Pakistani N=58	16	27.6	25	43.1	1	1.7	16	27.6

II Average Number of Sessions in Pre-School Centre per Week. By ethnic group*

Ethnic Group	*Sessions*	
	mean	sd
UK White n=1652	5.06	2.38
Mixed n=139	6.93	2.87
White European n=88	6.16	2.85
Black Caribbean n = 72	8.67	2.37
Black African n= 48	8.21	2.50
Indian n = 31	5.71	2.30
Pakistani n = 58	6.26	2.59

* Only data for most numerous groups shown

APPENDIX 2.1 : THE FULL CONTEXUALISED MODEL: TOTAL BAS SCORE AT ENTRY

Random Parameter Matrix	***Estimate***	***SE***
Centre level variance	4.236	1.275
Child level variance	94.680	3.034
Fixed Effects		
Intercept	40.330	2.29
Reading (compared with less than once a week)		
special occasions	4.928	2.62
once a week	4.130	2.183
several times week	2.910	1.760
daily	4.678*	1.763
twice daily	6.534*	1.900
reading frequency nk/no response	0.003	6.026
Library visits (compared with none)		
special occasions	0.414	0.179
once a month	2.537*	0.672
once a fortnight	2.609*	0.758
once a week	3.046*	0.787
nk/no response	2.348	9.893
Frequency child plays with letters/numbers (compared with never/ infrequently)		
1-4 times per week	1.015	0.636
5-7 times per week	1.613*	0.711
Parents' emphasis on teaching alphabet (compared with no mention)		
some emphasis	2.656*	*0.705*
a lot of emphasis	2.905*	1.021
nk/no response	0.812	3.260
Parents' emphasis on teaching songs/ poems/ nursery rhymes (compared with no mention)		
some emphasis	0.406	0.974
a lot of emphasis	2.838*	0.995
nk/no response	0.362	13.59
Child's age at BAS (centered around mean age)	1.546*	0.085
Child's age at entry to target pre-school (centered around mean age)	-1.107*	0.032
Gender (compared with boys)		
girls	2.139*	0.444

APPENDIX 2.1 : CONTINUED…..

Fixed Effects	***Estimate***	***SE***
Ethnic Group (compared with White UK)		
White European	-0.486	1.254
Black Carribbean	-1.250	1.315
Black African	-3.223*	1.706
Black other	0.117	3.370
Indian	-3.355	2.096
Pakistani	-7.523*	2.159
Other	-2.245	2.672
Mixed Heritage	-2.452*	0.953
First Language (compared with English)		
Not English	-6.489*	1.589
Number of Siblings (compared with none)		
1-2 siblings	-0.029	0.560
3 plus	-2.638*	0.809
Pre-maturity (compared with full term)		
premature	-1.585*	0.629
prematurely nk	3.937	5.188
Mother's highest level qualification (compared with none)		
16 vocational	0.858	1.794
16 academic	3.094*	0.687
18 vocational	3.434*	0.863
18 academic	3.432*	1.005
degree	6.324*	0.975
higher degree	8.461*	1.339
Other Professional	4.528	2.34
Other Misc.	3.987	2.255
Qual. nk	2.693	2.259
Father's employment status (compared with employed full time)		
self employed	0.159	0.179
employed pt	-2.712	1.650
not working/unemployed	-2.190*	0.888
status nk	-1.469	1.358
Social class of father's occupation (compared with professional non-manual)		
non manual II	-0.081	0.969
skilled man III	-1.380	1.082
semi-skilled man IV	-3.113*	1.192
unskilled manual V	-4.188*	2.048
social class nk	-2.197	1.637
Number of sessions a week at pre-school centre (compared with 10 sessions)		
7-9 sessions	1.224	1.412
4-6 sessions	-1.307	0.695
2-3 sessions	-2.156*	0.838
sessions nk	-9.344	4.576

*p <0.05
n = 2059 children
n = 114 centres

APPENDIX 2.2 : THE FULL CONTEXUALISED MODEL: NON-VERBAL SCORE AT ENTRY

Multilevel models were used to examine the impact of children's personal, family and home environment characteristics on non-verbal cognitive attainment at entry to the study. The null and final models are reported here.

Null Model		
	Estimate	SE
Centre level variance	9.342	1.505
Child level variance	35.48	1.126
Intra centre correlation	0.2084	

Final Model		
	Estimate	SE
Centre level variance	1.094	0.3538
Child level variance	28.370	0.8998
Intra centre correlation	0.0371	

Reduction in total variance	34.3
Reduction in centre level variance	88.3

The results indicate that there are significant centre level differences in children's non-verbal attainment at entry (intra centre correlation 0.208). When the characteristics of children at entry are included in the multilevel model over 34 per cent of the total variance and 88 per cent of the centre level variance is accounted for. A range of child, family and home environment characteristics show a statistically significant relationship to children's non-verbal attainment at entry to the EPPE study. In contrast to the results for total BAS score, no significant ethnic differences in children's non-verbal results were identified when other factors are controlled, and thus this measure was not retained in the final model. Other results are broadly similar to those reported in Appendix 2.1, although father's employment status is not statistically significant. Details of the final model are reported below.

Random Parameter Matrix	**Estimate**	**SE**
Centre level variance	1.094	0.354
Child level variance	28.37	0.899
Fixed Effects		
Intercept	15.13	1.196
Gender (compared with boys)		
girls	1.133*	0.238
Child's age at BAS (centred around mean age)	0.8309*	0.1453
Child's age at entry to target pre-school (centred around mean age)	-0.044*	0.017
First language (compared with English)		
not English	-1.578*	0.536
Number of sibling (compared with none)		
1-2 siblings	0.443	0.302
3 plus	-9002*	0.432
not known	1.890	1.961
Prematurity (compared with full term)		
premature	-0.943*	0.338
prematurity nk	0.272	2.717
Mother's highest qualification level (compared with none)		

16 vocational	1.668	0.977
16 academic	1.585*	0.364
18 vocational	1.377*	0.462
18 academic	2.463*	0.533
degree	2.698*	0.517
higher degree	4.311*	0.715
other professional	2.835*	1.275
other misc.	1.086	1.225
qualification nk	2.217	1.229
Father's employment status (compared with employed full time)		
self employed	0.293	0.390
employed pt	-0.969	0.949
not working/unemployed	-0.688	0.466
status nk	-0.664	0.736
Social class of father's occupation (compared with professional non-manual)		
non manual II	-0.350	0.529
non manual III	-1.243*	0.610
skilled man III	-0.384	0.587
semi-skilled man IV	-1.139	0.644
unskilled manual V	-1.717	1.087
Social class nk	-0.904	0.881
Reading to child (compared to less than once a week)		
special occasions	2.362	1.310
once a week	2.111	1.109
several time per week	1.514*	0.880
daily	2.166*	0.869
twice daily	2.653*	0.951
reading frequently nk/no response	-2.414	3.022
Parent's Emphasis on teaching numbers (compared with no mention)		
some emphasis	0.775	0.567
a lot of emphasis	1.492*	0.718
nk known / no response	0.731	2.294
Parent's emphasis on teaching songs/poems/nursery rhymes (compared with no mention)		
some emphasis	0.423	0.515
a lot of emphasis	1.126*	0.527
nk / no response	1.701	4.093
Number of sessions per week at pre-school centre (compared with 10 sessions)		
7-9 sessions	1.336	0.766
4-6 sessions	-0.723*	0.359
2-3 sessions	-1.406*	0.437
sessions nk	-0.948	2.788

n of children = 2099
n of centres = 114
*$p < 0.05$
nk = not known

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The Effective Provision of Pre-School Education (EPPE) Project

Technical Paper 3

Contextualising EPPE: Interviews with Local Authority Co-Ordinators and Centre Managers

A Longitudinal Study funded by the DfEE
1997-2003

PS 028277

Technical Paper 3

CONTEXTUALISING EPPE : INTERVIEWS WITH LOCAL AUTHORITY CO-ORDINATORS AND CENTRE MANAGERS

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Contents

Page Number

Overview of the Project 1-11

Executive Summary i -iv

Introduction 1

Sample and procedure 1

Perceived benefits of recent national initiatives 2

Expansion in provision as a response to the initiative 7

Progress being made in partnership/collaboration 8

Quality assurance: arrangements and responsibilities 12

Training 16

Involvement of qualified teachers in early years provision 17

The effect on new initiatives on parental choice 18

The effects of new initiatives on parental involvement 19

Improvements in children's experience 20

Perceived effects of the Early Excellence Centres 24

Perceived effects on Special Needs provision 24

Local Priorities 25

Suggestions for National Policy 25

References 27

FIGURES

FIGURE 1 The sample 2

FIGURE 2 What are the main characteristics of effective pre-school practice? 4

FIGURE 3 Has your centre changed as a consequence of recent national initiatives? 6

FIGURE 4 What has been the key issue in these changes for your centre? 6

FIGURE 5 Do you think that enrolment has been/will be affected by recent national changes? 7

FIGURE 6 Do you think the experiences of children have changed much? 20

FIGURE 7 Impact of Desirable Learning Outcomes on centres. 21

APPENDICES

Tables 1-7 Frequencies shown in Figures 1-7 28

Semi-structured interview schedule for centre managers 30

Semi-structured interview schedule for local authority co-ordinators 31

Table 8 LEAs responses to recent government initiatives on ECE provision 32

Effective Provision of Pre-school Education

"EPPE"

Overview of the Project

This series of 12 reports describes the research on effective pre-school provision funded by the UK Department for Education & Employment (DfEE). Further details appear in Technical Paper 1 (Sylva, Sammons, Melhuish, Siraj-Blatchford & Taggart 1999). This longitudinal study assesses the attainment and development of children followed longitudinally between the ages of 3 and 7 years. Three thousand children were recruited to the study over the period January 1997 to April 1999 from 141 pre-school centres. Initially 114 centres from four types of provision were selected for the study but in September 1998 an extension to the main study was implemented to include innovative forms of provision, including 'combined education and care' (Siraj-Blatchford et al. 1997).

Both qualitative and quantitative methods (including multilevel modelling) have been used to explore the effects of individual pre-school centres on children's attainment and social/behavioural development at entry to school and any continuing effects on such outcomes at the end of Key Stage 1 (age 7). In addition to centre effects, the study investigates the contribution to children's development of individual and family characteristics such as gender, ethnicity, language, parental education and employment. This overview describes the research design and discusses a variety of research issues (methodological and practical) in investigating the impact of pre-school provision on children's developmental progress. A parallel study is being carried out in Northern Ireland.

There have been many initiatives intended to improve educational outcomes for young children. Will these initiatives work? Will they enable children to enter school 'more ready' to learn, or achieve more at the end of Key Stage 1? Which are the most effective ways to educate young children? The research project described in this paper is part of the new emphasis on ensuring 'a good start' for children.

PREVIOUS RESEARCH ON THE EFFECTS OF EARLY EDUCATION IN THE UK

There has been little large-scale, systematic research on the effects of early childhood education in the UK. The 'Start Right' Enquiry (Ball 1994; Sylva 1994) reviewed the evidence of British research and concluded that small-scale studies suggested a positive impact but that large-scale research was inconclusive. The Start Right enquiry recommended more rigorous longitudinal studies with baseline measures so that the 'value added' to children's development by pre-school education could be established.

Research evidence elsewhere on the effects of different kinds of pre-school environment on children's development (Melhuish et al. 1990; Melhuish 1993; Sylva & Wiltshire 1993; Schweinhart & Weikart 1997; Borge & Melhuish, 1995; National Institute of Child Health Development 1997) suggests positive outcomes. Some researchers have examined the impact of particular characteristics, e.g. gender and attendance on children's adjustment to nursery classes (Davies & Brember 1992), or adopted cross-sectional designs to explore the impact of different types of pre-school provision (Davies & Brember 1997). Feinstein, Robertson & Symons (1998) attempted to evaluate the effects of pre-schooling on children's subsequent progress but birth cohort designs may not be appropriate for the study of the influence of pre-school education. The absence of data about children's attainments at entry to pre-school means that neither the British Cohort Study (1970) nor the National Child Development Study (1958) can be used to explore the effects of pre-school education on children's progress. These studies are also limited by the time lapse and many changes in the nature of pre-school provision which have

110

occurred. To date no research using multilevel models (Goldstein 1987) has been used to investigate the impact of both type of provision **and** individual centre effects. Thus little research in the UK has explored whether some forms of provision have greater benefits than others. Schagen (1994) attempted multilevel modelling but did not have adequate control at entry to pre-school.

In the UK there is a long tradition of variation in pre-school provision both between types (e.g. playgroup, local authority or private nursery or nursery classes) and in different parts of the country reflecting Local Authority funding and geographical conditions (i.e. urban/rural and local access to centres). A series of reports (House of Commons Select Committee 1989; DES Rumbold Report 1990; Ball 1994) have questioned whether Britain's pre-school education is as effective as it might be and have urged better co-ordination of services and research into the impact of different forms of provision (Siraj-Blatchford 1995). The EPPE project is thus the first large-scale British study on the effects of different kinds of pre-school provision and the impact of attendance at individual centres.

OVERVIEW OF RESEARCH METHODS

The EPPE project is a major study instituted in 1996 to investigate three issues which have important implications for policy and practice:

- the effects on children of different types of pre-school provision,
- the 'structural' (e.g. adult-child ratios) and 'process' characteristics (e.g. interaction styles) of more effective pre-school centres, and
- the interaction between child and family characteristics and the kind of pre-school provision a child experiences.

An educational effectiveness research design was chosen to investigate these topics because this enabled the research team to investigate the progress and development of individual children (including the impact of personal, socio-economic and family characteristics), and the effect of individual pre-school centres on children's outcomes at both entry to school (the start of Reception which children can enter between the ages of 4 and 5 plus) and at the end of Key Stage 1 (age 7 plus). Such research designs are well suited to social and educational research with an institutional focus (Paterson & Goldstein 1991). The growing field of school effectiveness research has developed an appropriate methodology for the separation of intake and school influences on children's progress using so called 'value added' multilevel models (Goldstein 1987, 1995). As yet, however, such techniques have not been applied to the pre-school sector, although recent examples of value added research for younger ages at the primary level have been provided by Tymms et al. 1997; Sammons & Smees 1998; Jesson et al. 1997; Strand 1997; and Yang & Goldstein 1997. These have examined the relationship between baseline assessment at reception to infant school through to Key Stage 1 (age 7 plus years).

School effectiveness research during the 1970s and 1980s addressed the question "*Does the particular school attended by a child make a difference?*" (Mortimore et al. 1988; Tizard et al. 1988). More recently the question of internal variations in effectiveness, teacher/class level variations and stability in effects of particular schools over time have assumed importance (e.g. Luyten 1994; 1995; Hill & Rowe 1996; Sammons 1996). This is the first research to examine the impact of individual pre-school centres using multilevel approaches. The EPPE project is designed to examine both the impact of type of pre-school provision as well as allow the identification of particular pre-school characteristics which have longer term effects. It is also designed to establish whether there are differences in the effects of individual pre-school centres on children's progress and development. In addition, the project explores the impact of pre-school provision for different groups of children and the extent to which pre-schools are effective in promoting different kinds of outcomes (cognitive and social/behavioural).

The 8 aims of the EPPE Project

- To produce a detailed description of the 'career paths' of a large sample of children and their families between entry into pre-school education and completion (or near completion) of Key Stage 1.
- To compare and contrast the developmental progress of 3,000+ children from a wide range of social and cultural backgrounds who have differing pre-school experiences including early entry to Reception from home.
- To separate out the effects of pre-school experience from the effects of education in the period between Reception and Year 2.
- To establish whether some pre-school centres are more effective than others in promoting children's cognitive and social/emotional development during the pre-school years (ages 3-5) and across Key Stage 1 (5-7 years).
- To discover the individual characteristics (structural and process) of pre-school education in those centres found to be most effective.
- To investigate differences in the progress of different groups of children, e.g. second language learners of English, children from disadvantaged backgrounds and both genders.
- To investigate the medium-term effects of pre-school education on educational performance at Key Stage 1 in a way which will allow the possibility of longitudinal follow-up at later ages to establish long-term effects, if any.
- To relate the use of pre-school provision to parental labour market participation.

The sample: regions, centres and children

In order to maximise the likelihood of identifying the effects of individual centres and also the effects of various types of provision, the EPPE sample was stratified by type of centre and geographical location.

- Six English Local Authorities (LAs) in five regions were chosen strategically to participate in the research. These were selected to cover provision in urban, suburban and rural areas and a range of ethnic diversity and social disadvantage. (Another related project covering Northern Ireland was instituted in April 1998 [Melhuish et al. 1997]. This will enable comparison of findings across different geographical contexts.)
- Six main types of provision are included in the study (the most common forms of current provision; *playgroups*, local authority or voluntary *day nurseries*, *private day nurseries*, *nursery schools*, *nursery classes*, and centres *combining care and education*. Centres were selected randomly within each type of provision in each authority.

In order to enable comparison of centre and type of provision effects the project was designed to recruit 500 children, 20 in each of 20-25 centres, from the six types of provision, thus giving a total sample of approximately 3000 children and 140 centres[1]. In some LAs certain forms of provision are less common and others more typical. Within each LA, centres of each type were selected by stratified random sampling and, due to the small size of some centres in the project (e.g. rural playgroups), more of these centres were recruited than originally proposed, bringing the sample total to 141 centres and over 3000 children.

---

[1] The nursery school and combined centre samples were added in 1998 and their cohorts will be assessed somewhat later; results will be reported separately and in combined form.

Children and their families were selected randomly in each centre to participate in the EPPE Project. All parents gave written permission for their children to participate.

In order to examine the impact of no pre-school provision, it was proposed to recruit an additional sample of 500 children pre-school experience from the reception classes which EPPE children entered. However in the five regions selected a sample of only 200+ children was available for this 'home' category.

The progress and development of pre-school children in the EPPE sample is being followed over four years until the end of Key Stage 1. Details about length of sessions, number of sessions normally attended per week and child attendance have been collected to enable the amount of pre-school education experienced to be quantified for each child in the sample. Two complicating factors are that a substantial proportion of children have moved from one form of pre-school provision to another (e.g. from playgroup to nursery class) and some will attend more than one centre in a week. Careful records are necessary in order to examine issues of stability and continuity, and to document the range of pre-school experiences to which individual children can be exposed.

Child assessments

Around the third birthday, or up to a year later if the child entered pre-school provision after three, each child was assessed by a researcher on four cognitive tasks: verbal comprehension, naming vocabulary, knowledge of similarities seen in pictures, and block building. A profile of the child's social and emotional adjustment was completed by the pre-school educator who knew the child best. If the child changed pre-school before school entry, he or she was assessed again. At school entry, a similar cognitive battery was administered along with knowledge of the alphabet and rhyme/alliteration. The Reception teacher completed the social emotional profile.

Further assessments were made at exit from Reception and at the end of Years 1 and 2. In addition to standardised tests of reading and mathematics, information on National Assessments will be collected along with attendance and special needs. At age 7, children will also be invited to report themselves on their attitudes to school.

Measuring child/family characteristics known to have an impact on children's development

1) Information on individual 'child factors' such as gender, language, health and birth order was collected at parent interview.

2) Family factors were investigated also. Parent interviews provided detailed information about parent education, occupation and employment history, family structure and attendance history. In addition, details about the child's day care history, parental attitudes and involvement in educational activities (e.g. reading to child, teaching nursery rhymes, television viewing etc) have been collected and analysed.

Pre-school Characteristics and Processes

Regional researchers liaised in each authority with a Regional Coordinator, a senior local authority officer with responsibility for Early Years who arranged 'introductions' to centres and key staff. Regional researchers interviewed centre managers on: group size, child staff ratio, staff training, aims, policies, curriculum, parental involvement, etc.

'Process' characteristics such as the day-to-day functioning within settings (e.g. child-staff interaction, child-child interaction, and structuring of children's activities) were also studied. The Early Childhood Environment Rating Scale (ECERS) which has been recently adapted (Harms, Clifford & Cryer 1998) and the Caregiver Interaction Scale (Arnett 1989) were also administered. The ECERS includes the following sub-scales:

- Space and furnishings
- Personal care routines
- Language reasoning
- Activities
- Interaction
- Programme structure
- Parents and staffing

In order that the more educational aspects of English centres could be assessed, Sylva,Siraj-Blatchford, Taggart & Colman (unpublished) developed four additional ECERS sub-scales describing educational provision in terms of: Language, Mathematics, Science and the Environment, and Diversity.

Setting the centres in context

In addition to describing how each centre operated internally, qualitative interviews were conducted with centre managers to find out the links of each setting to local authority policy and training initiatives. Senior local authority officers from both Education and Social Services were also interviewed to find out how each local authority implemented Government early years policy, especially the Early Years Development Plans which were established to promote education and care partnerships across providers in each local authority.

Case Studies

In addition to the range of quantitative data collected about children, their families and their pre-school centres, detailed qualitative data will be collected using case studies of several "effective" pre-school centres (chosen retrospectively as 'more effective' on the basis of the multilevel analyses of intake and outcome measures covering the period baseline to entry into reception). This will add the fine-grained detail to how processes within centres articulate, establish and maintain good practice.

The methodology of the EPPE project is thus mixed. These detailed case studies will use a variety of methods of data gathering, including documentary analysis, interviews and observations and the results will help to illuminate the characteristics of more successful pre-school centres and assist in the generation of guidance on good practice. Particular attention will be paid to parent involvement, teaching and learning processes, child-adult interaction and social factors in learning. Inevitably there are difficulties associated with the retrospective study of process characteristics ofcentres identified as more or less effective after children in the EPPE sample have transferred to school and it will be important to examine field notes and pre-school centre histories to establish the extent of change during the study period.

ANALYTIC STRATEGY

The EPPE research was designed to enable the linking of three sets of data: information about children's attainment and development (at different points in time), information about children's personal, social and family characteristics (e.g. age, gender, SES etc), and information about pre-school experience (type of centre and its characteristics).

Identifying individual centre effects and type of provision at entry to school

Longitudinal research is essential to enable the impact of child characteristics (personal, social and family) to be disentangled from any influence related to the particular pre-school centre attended. Multilevel models investigate the clustered nature of the child sample, children being nested within centres and centres within regions. The first phase of the analysis adopts these three levels inmodels which attempt to identify any centre effects at entry to reception class.

Given the disparate nature of children's pre-school experience it is vital to ensure that the influences of age at assessment, amount and length of pre-school experience and pre-school attendance record are accounted for when estimating the effects of pre-school education. This information is also important in its own right to provide a detailed description of the range of pre-school provision experienced by different children and any differences in the patterns of provision used by specific groups of children/parents and their relationship to parents' labour market participation. Predictor variables for attainment at entry to reception will include prior attainment (verbal and non-verbal sub scales), social/emotional profiles, and child characteristics (personal, social and family). The EPPE multilevel analyses will seek to incorporate adjustment for measurement error and to examine differences in the performance of different groups of children at entry to pre-school and again at entry to reception classes. The extent to which any differences increase/decrease over this period will be explored, enabling equity issues to be addressed.

After controlling for intake differences, the estimated impact of individual pre-schoolcentres will be used to select approximately 12 'outlier' centres from the 141 in the project for detailed case studies (see 'Case Studies' above). In addition, multilevel models will be used to test out the relationship between particular process quality characteristics of centres and children's cognitive and social/behavioural outcomes at the end of the pre-school period (entry to school). The extent to which it is possible to explain (statistically) the variation in children's scores on the various measures assessed at entry to reception classes will provide evidence about whether particular forms of provision have greater benefits in promoting such outcomes by the end of the pre-school period. Multilevel analyses will test out the impact of measures of pre-school process characteristics, such as the scores on various ECERS scales and Pre-School Centre structural characteristics such as ratios. This will provide evidence as to which measures are associated with better cognitive and social/behavioural outcomes in children.

Identifying continuing effects of pre-school centres at KS1

Cross-classified multilevel models have been used to examine the long term effects of primary schools on later secondary performance (Goldstein & Sammons, 1997). In the EPPE research it is planned to use such models to explore the possible mid-term effects of pre-school provision on later progress and attainment at primary school at age 7. The use of cross classified methods explicitly acknowledges that children's educational experiences are complex and that over time different institutions may influence cognitive and social/behavioural development for better or worse. This will allow the relative strength of any continuing effects of individual pre-school centre attendance to be ascertained, in comparison with the primary school influence.

THE LINKED STUDY IN NORTHERN IRELAND 1998-2003

The Effective Pre-school Provision in Northern Ireland (EPPNI) is part of EPPE and is under the directorship of Professor Edward Melhuish, Professor Kathy Sylva, Dr. Pam Sammons, and Dr. Iram Siraj-Blatchford. The study explores the characteristics of different kinds of early years provision and examines children's development in pre-school, and influences on their later adjustment and progress at primary school up to age 7 years. It will help to identify the aspects of pre-school provision which have a positive impact on children's attainment, progress, and development, and so provide guidance on good practice. The research involves 70 pre-school centres randomly selected throughout Northern Ireland.

The study investigates all main types of pre-school provision attended by 3 to 4 year olds in Northern Ireland: playgroups, day nurseries, nursery classes, nursery schools and reception groups and classes. The data from England and Northern Ireland offer opportunities for potentially useful comparisons.

SUMMARY

This "educational effectiveness" design of the EPPE research study enables modelling of the complicated effects of amount and type of pre-school provision (including attendance) experienced by children and their personal, social and family characteristics on subsequent progress and development. Assessment of both cognitive and social/behavioural outcomes has been made. The use of multilevel models for the analysis enables the impact of both type of provision and individual centres on children's pre-school outcomes (at age 5 and later at age 7) to be investigated. Moreover, the relationships between pre-school characteristics and children's development can be explored. The results of these analyses and the findings from the qualitative case studies of selected centres can inform both policy and practice. A series of 12 technical working papers will summarise the findings of the research.

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Contextualising EPPE: Interviews with Local Authority Co-ordinators and Centre Managers

EXECUTIVE SUMMARY

This report looks at the impact of recent government initiatives on early childhood care and education for 3 to 5-year olds in the full range of pre-school centres. The report is based on interviews conducted with 135 heads of pre-school settings and 12 local authority co-ordinators in six local authorities between April 1998 and March 1999. The study shows that the main impact has come from:

- The Desirable Learning Outcomes (DLOs) (SCAA, 1996): First introduced in 1996, the DLOs have been extremely influential in determining the curriculum to be delivered by centres receiving government funding for four-year-olds.
- Section 10 inspection arrangements: Introduced to ensure the quality of educational provision for nursery classes and nursery schools under local education authority provision (Section 10 of the School Inspections Act, 1996).
- Section 5 inspection arrangements: Introduced to ensure the quality of educational provision for the private, voluntary and independent sector provision (Section 5 of the Nursery Education and Grant Maintained Schools Act, 1996)
- Increased collaboration: In 1997 the Government required local authorities to devise Early Years Development Plans (EYDP) in collaboration with the state, private and voluntary sectors to be in place from 1 April 1998.
- *Meeting the Childcare Challenge* (1998): The publication of new regulations and funding for a childcare strategy for children 0-14.
- The Revenue Support Grant and the Specific Grant for four-year-olds and other pre-school children: Providing new funding arrangements.
- The Standards Fund (1998): Introduced to support the training of early years staff (50% met by the local authority).
- The 25 Early Excellence Centres: Establishing a network intended to act as a model for cross-sectoral partnership. So far, 23 have been designated.
- The involvement of qualified teachers: Local authorities have been required to address this issue in their EYDPs.

Early childhood care and education have experienced a period of rapid change and a central aim of the study has therefore been to establish the extent to which this has had an impact on the centres within which the EPPE study is taking place. We have found that the earlier policy initiatives, for instance, the Desirable Learning Outcomes (DLOs) and arrangements for inspection and funding have had the main impact. The EYDPs have had a major impact at the local authority level but this has not been so apparent at centre level. Other policies are only just beginning to have an effect and this is at a point when most of the children in the EPPE study are leaving to enter primary schools

Local Authority co-ordinators have generally reported positive advances towards greater communication, co-ordination and quality assurance within their local authorities. Only in one authority did there appear to be more specific problems than solutions. Here, providers were concerned about the funding of the newly integrated structures developed under the

EYDPs and they were especially concerned that the current level of funding needed to be sustained, and should be improved in the future.

All of the co-ordinators approved of the underlying principles that informed the new initiatives but most of them felt that the changes they were being expected to manage were happening too quickly. Most of the authorities seemed to be coping because they had already achieved some degree of collaboration before the new policy initiatives came into place. The co-ordinators and their local authorities were rising to the challenges that they faced regardless of the uncertainties which they felt lay ahead of them.

1. Response to the change

The area perceived to be of greatest stress, was the over-emphasis on provision and education for four-year-olds. This focus appears to have raised conflict between service providers. Problems have been concerned with; provisions for 3-year-olds; admissions policies within local authorities; what has often been perceived as the unfair advantage schools have in encouraging parents to send their children to school at four; and the requirement to deliver a curriculum leading to the DLOs for four-year-olds. All these were seen as major changes over the period of the EPPE study. The inspection arrangements associated with the DLOs, and the integration of care and education have also been seen as major changes to the way the private, voluntary and daycare sectors have worked in the past. These issues are seen as less of a problem by the education sector, and by nursery classes and nursery schools which already had established patterns of inspection along the lines of the school system through DfEE registration. There seems to be more conflict in rural areas between providers relating to admissions, collaboration, falling roles, the distances to get to training and regarding parental choice. Authorities which had a history of integration and innovation appeared to be on a fast-track to implementing their initiatives.

At local authority level, where co-ordinators had the benefit of seeing the 'big picture', through being an instrumental part of the EYDPs, they especially valued the emphasis on quality, which the new initiatives were requiring them to focus upon. Inspection data were being used to monitor quality and to plan future training. However, there was widespread recognition that these were 'early days' and that there was a long way to go before they would see the level of improvement that they would like in the training of staff and inspectors, and in terms of integration between care and education.

Daycare managers reported the greatest change, followed by managers of nursery schools, playgroups and private nurseries. There was no suggestion that nursery classes were integrating care into their settings in the same way that education was being defined and monitored through the DLOs and the system of inspection. The nursery schools, while set within an educational framework, were more likely to perceive change because they faced greater demands for more flexible childcare provision, for after-school care, the introduction of under-threes and because five of them were designated Early Excellence Centres. Nursery schools have also been under threat of closure in some authorities.

Playgroups generally perceive the changes associated with the DLOs and Section 5 inspections as putting them under undue pressure. Playgroup managers often referred to the impact of becoming more 'formal' in their approach to children. They were frustrated with the increased paperwork and found the pressures of inspection difficult, some did not feel 'qualified' to undertake their new role. Most of the playgroup managers commented on the role of playgroups as play oriented, informal provision. In contrast some of the private nurseries said they welcomed the DLOs because it made their practice 'less formal'. Daycare and playgroup managers reported the highest level of change to their centres as a result of recent initiatives, but the daycare managers were more positive in their comments. They were more positive about the DLOs, the emphasis generally on curriculum, and in particular the emphasis on further training.

2. Enrolment and admissions

All the local authorities had planned carefully for their under-fives provision. There was little evidence of any expansion of provision for under-fives but there was some evidence of the reconfiguration of services to meet the demands and shortfalls in particular areas of each authority. In this respect the EYDPs were most effective, two of the local authorities had discovered that some of their lowest provision was in high multi-ethnic areas and they were keen to rectify the situation.

In terms of admissions and enrolment, the private sector in our sample was most likely to be affected by falling roles. This was followed by the playgroups and daycare and the least likely to be affected were nursery classes, followed by nursery schools. However, to some extent, nearly all of these existing providers were experiencing a loss of their 4-year-olds as primary schools were creating additional places. Many settings were resorting to enrolling younger children to keep their numbers. The child population of most of the centres was becoming younger. Parents reported a number of reasons for taking their 4-year-olds to reception classes, the main ones being to secure admission to the school of their choice and to obtain full-day, free provision. Some managers claimed that some playgroups and private nurseries were closing down as a result of the reduced numbers of children or the increased pressures associated with the curriculum and inspection.

3. Greater collaboration?

Most providers welcomed the initiative to create greater integration of care and education as well as the concept of partnership between providers across their local authorities. Five of the six local authorities reported increased collaboration between providers with particular benefits to the voluntary and private sectors who had had very little 'voice' before the EYDPs at local authority level. At the centre level only 50 centres reported being involved in any way with the EYDP. This is not surprising given the short time that has elapsed since the initiatives were first implemented, almost everyone agreed that these were 'early days'. For the EPPE study this suggests that the EYDPs were not, generally speaking, having very much impact at the centre level. It was only the nursery schools that reported a relatively high level of effect (63%), this is likely to be partly accounted for by the fact that five of them became Early Excellence Centres recently. Some of them are also used by the local authorities to 'lead' change in combining care and education, after school care and in changing their intake age of children and their opening times. The greatest impact on settings was from those areas where policy initiatives had begun in the mid-1990s.

4. Aiming at quality

Local authorities were coordinating quality assurance by monitoring inspection reports and offering training. However some providers were dissatisfied with the level of pre- and post inspection support they received, particularly in the private and voluntary sectors. The local authorities saw training as the key route to improving quality, but they expressed the view that it was the greatest challenge for them given current resources and the large number of early years educators who needed sustained, upgraded training.

The interviews with the 135 managers revealed that key terms such as 'assessment', 'teaching', 'play', 'work' and 'learning' are interpreted as meaning different things. This constitutes a serious problem and the interpretation of many of these concepts affects perceptions of quality and affects perceptions of and reactions to current policy initiatives. While it is difficult to assess the direct impact this has on children's experiences, it is important because some providers perceived assessment as synonymous with testing, and others clearly interpreted 'having to' teach children as neglecting play centered (and more child-initiated) methods for (teacher initiated) worksheets. This contrasted greatly with other providers who offered detailed accounts of assessment procedures which were supplemented with profiles and to delivering the DLOs through a developmentally appropriate curriculum. This does suggest that until there is more uniformity in training children will continue to receive different experiences in different kinds of provision.

INTRODUCTION

Technical Paper 3 reports on two interviews (see appendices for copies of interview schedules) conducted during April-August 1998, and February-March 1999. One interview was devised for local authority early years co-ordinators in our study. The other was for the managers of the 141 pre-school centres in the extended EPPE study. The aim of the two interviews is to provide contextual information for the EPPE research project which is being conducted in pre-school centres in our 5 regions (six local authorities) in England. We are studying changing centres (at a time of rapid policy development) and not static ones, and because of the diversity in pre-school provision, different providers might be experiencing the impact of policy in different ways. Members of the DfEE EPPE project Steering Committee were eager for us to provide an account of how recent changes in local authority under-fives provision might be affecting the 141 centres that we are studying.The main 'changes' were likely to be the result of recent initiatives concerning Partnership Plans and increased collaboration across pre-school services, the introduction of the Desirable Learning Outcomes (DLOs) and inspection arrangements, new funding arrangements and plans for training (see Appendix for the two semi-structured centre and local authority level interview schedules). For readers who are not familiar with recent English Early Years policy initiatives, a brief explanation has been provided at the beginning of the report in the executive summary.

SAMPLE AND PROCEDURE

The semi-structured interview schedules and the direction of the study were agreed with the DfEE. Co-ordinators in our six local authorities (LAs)[1] were sent copies of the interview schedule prior to being interviewed in the period April – August 1998. The local authority co-ordinators were interviewed face-to-face in their authority by the same interviewer (a member of the Central Research Team). Each interview lasted between 1 - 3 hours, depending on the number of respondents present. Their responses were recorded, transcribed and returned to the co-ordinators to allow them to check any inaccuracies during September and October 1998. All but one of the authorities took the opportunity of making minor editorial changes to the transcriptions at this stage. A total of 12 co-ordinators were interviewed, all were senior members of staff in their authority, with direct responsibility for overseeing early years services and implementing change in early year provision.

Local Authority	No. of Early Years Co-ordinators	Education background	Social Services background
T	3	2	1
V	2	1	1
W	1	0	1
X	1	1	0
Y	3	2	1
Z	2	1	1
Total Number	**12**	**7**	**5**

Telephone interviews were conducted with centre managers in the EPPE project in two stages by one interviewer. In the first stage 108 out of a total of 114 managers from four types of provision; nursery classes, local authority daycare centres, playgroups and private nurseries were interviewed between April to early August 1998. In September 1998 the EPPE project was extended to include a fifth type of provision, nursery schools, and the same interviewer conducted telephone interviews with all 27 nursery school headteachers during a period of four weeks between February-March

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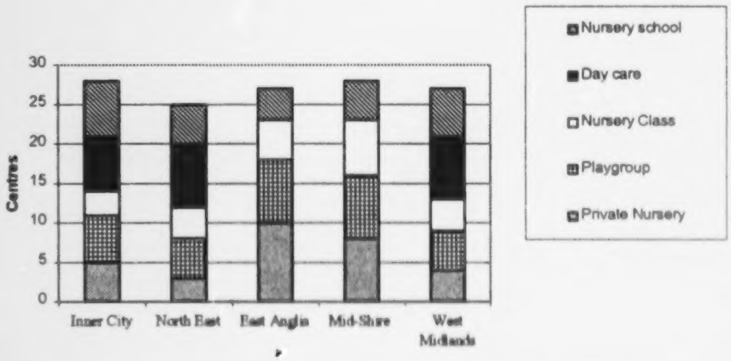
[1] Co-ordinators responses are coded below according to the authority they were speaking from (T, V, W, X, Y or Z).

1999. The information collected from both sets of managers is comparable because the interviews were all conducted within a working period defined by the 1998-1999 Partnership Plan frameworks. Of the 27 nursery schools in our sample 5 are designated Early Excellence Centres and 7 can be described as fully integrated, combined (care and education) nursery schools (some nursery schools are in more than one category). A copy of the interview schedule had been sent to each centre manager before the initial telephone contact was made. In the majority of cases it was the head of centre who gave the final interview although where this was not possible a member of staff was designated by them (in 11% of cases). At least one in three interviews were tape-recorded.

The centres were selected to provide a representative sample across the five regions making a total of 141 centres of which 135 (96%) were able to respond (n=135) (see FIGURE 1 below, frequency tables are also provided in the Appendices). The final sample in this study included 30 Private Nurseries (PNs), 32 Playgroups (PGs), 23 Nursery Classes (NCs), 23 local authority Daycare Centres (DCs) and 27 Nursery Schools (NSs). The designation of the respondents was 40 managers, 45 headteachers, 27 play group leaders, 7 teachers, 4 deputy managers, 3 playgroup supervisors, 2 chair of governors (pgs), 1 nursery officer, 1 private nursery school owner, 1 nursery nurse, 1 head of nursery, 1 nursery co-ordinator, 1 pre-school worker and 1 joint manager of a nursery cooperative.

Fig. 1: The Sample (n=135)



All the information received from the interviews has been analysed and triangulated with the information contained in the 1998-1999 Early Years Development Plans and from the interviews conducted with the local authority co-ordinators in each of the 6 local authorities.

THE PERCEIVED BENEFITS OF RECENT NATIONAL INITIATIVES

The recent initiatives were generally considered beneficial by Local Authority (LA) co-ordinatorswho referred to very positive effects upon local initiatives. The co-ordinators' reported that earlyyears staff were generally feeling more valued, and receiving a much needed boost to their morale. The additional funding made available by Government was also appreciated especially where this resulted in additional staffing. However, there were concerns that a good deal more resourcing would be required if the policies were to be fully implemented and sustained. One co-ordinator expressed special concern regarding the practice of allocating funding according to the 4-year-olds in the maintained sector, while the authority's needs related to their work in all their settings. She argued that all sectors are now funded from the Local Authority but they are not allowed to 'top-slice' to cover the extra work.

While the integration of education and care at the authority level is clearly advanced, some concern was expressed regarding the difficulties to be faced in establishing integrated provision on the ground.

> *We're just at the beginning (Z4)* (Z=local authority and 4=No. of the question responded to).

It was also clear that, historically, some authorities and centres have spent much longer developing integrated provision than others have.

> *There are now lots of local initiative but it is not integrated yet, as it is still too early (X4).*
>
> *Integration at the local level is a time consuming and a challenging developmental task. (W4).*

Many of the co-ordinators considered the issues surrounding the development of provision for 4-year-olds had dominated the work so far and a number of them referred to their concerns regarding the relative neglect in provision for the under-3s. The literacy hour (1997, National Literacy Strategy, HMSO) was specifically mentioned by most co-ordinators as having distracted attention from the wider issues of integration and quality.

The opportunities to review provision and to consult more openly across all the sectors and with parents/carers has been welcomed and was generally seen to be successful although the co-ordination has clearly presented something of a challenge for many authorities:

> *All these different layers of planning involving different people for some parts and others for all are very difficult to co-ordinate! (V2).*

References were made to the development of collaborative frameworks within the authorities as well as with those working outside and the overlap, which sometimes occurred across the work of different committees in the same authority. However, it was felt that the focus on*quality* within authorities was very valuable and that there were a number of key issues associated with standards, that people shared concern over, across the various sectors of provision. However, some co-ordinators felt that the lack of status accorded to early childhood workers, their care worker training, and the deep divisions in services had still to be acknowledged sufficiently. In this respect it is interesting to note that local authority co-ordinators' reactions to some of the issues in our questionnaire were responded to differently by those with a social services or voluntary sector history compared to those with an education background. In some cases, for instance, over the issue of teacher involvement in all early years settings there was open disagreement during the interview.

When the co-ordinators were asked about the relative contribution made by national and local initiatives they suggested that:

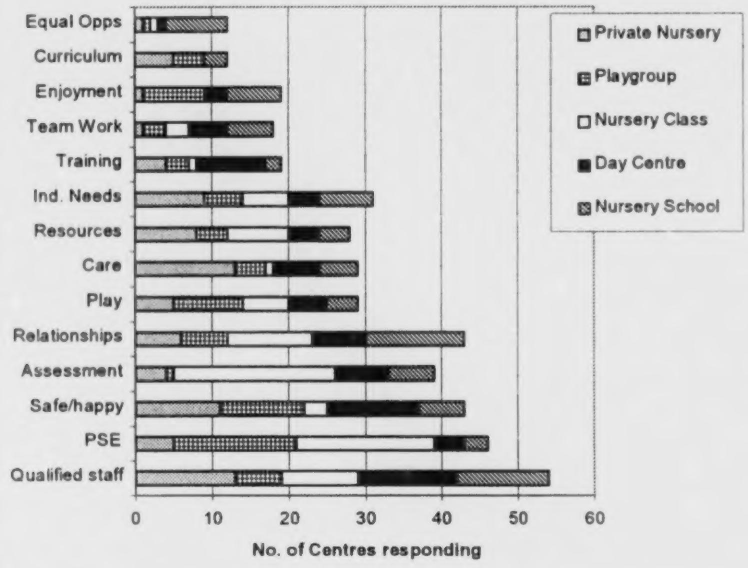
> *Where there is successful integration, it's due to long-term relationships and not due to recent initiatives by Government as it's too early (V4).*

We were concerned to identify and understand the perceptions of quality held by centre managers in the five kinds of provision we are studying; we suspected that their responses might be determined by different priorities. We therefore asked them to tell us what they considered were the main characteristics of effective nursery practice. The responses related to both the service provided and the child outcomes (see FIGURE 2 below). The day care centre managers tended to refer to the need for 'qualified staff' and argued that ongoing 'training and staff development' should be provided to ensure a sound knowledge of the needs of young children and child development. References were made to the need for INSET and for non-contact time. The managers of Private Nurseries also emphasised the need for qualified staff and for 'safe' provision for the children's 'individual needs'. Perhaps surprisingly, they were also the most likely group to emphasise 'care'.

> *A good nursery is only as good as the staff that are in it. So you need to employ qualified experienced staff who always want to move forward, who are enthusiastic, think about what they do, they actually want to be where they are (PN).*

The nursery school respondents referred to the need for 'qualifications', 'good relationships' and 'enjoyment', as well as equality of opportunity and provision for 'individual needs'.

Fig.2: What are the main characteristics of effective pre-school practice?



> *I think it's getting people over the front door initially and just welcoming them in. and seeing that they're part of the nursery. That building up of relationships and trust and a good feeling about them using the centre, all those kind of things. The actual practice of what happens in the nursery well, we could talk about that one for a long time couldn't we, but that's what I feel initially. You can't have effective nursery practice until you have built up that initial relationship with people that are going to come in and use the centre. (NS)*

The playgroups and nursery classes tended to emphasise the 'social, personal and physical development' of the child. More of the playgroups emphasised a commitment to learning 'through play and exploration' as well as to providing 'enjoyment'.

> *'In ours it's a friendly environment and the safety of the children and as I say the learning through play. We don't force any of them...The social side is very important in our group. One of our priorities to learn and to help the children and guide the children in their social skills because that's very important' (PG).*

Nursery classes, which are strongly embedded within the culture of primary schools were the most likely to refer to the need for 'planning, observation and assessment', and to the need to develop; 'good relationships between children, parents and staff'. They were less likely toprioritise care, enjoyment or safety, this might be because they are taken-for-granted through day-to-day regulation.

> *'Good planning for all areas of development; social, emotional, and physical, and intellectual. All the education is based on first hand experience actually seeing things and doing things, obviously the individual needs of children. Keeping in touch with parents, health visitors and social workers' (NC).*

Only 12 (under 9%) of the centre managers referred to the need for 'a well developed curriculum' (5 PN, 4 PG, 3NS). However, later in this report (see below) it is clear that DLOs which were implemented earlier than other initiatives have had one of the deepest effects on centre practice.

In all 95 (70%) of the centres told us that they had not changed in their approach to any of these key areas as a result of recent initiatives. Many felt that they had always had *'those kind of aims and objectives in mind anyway' (PN).* Thirty six (27%) of the centres said that they had changed although only 15% of NS felt that they had done so.

> *Yes we have. It's not all doom and gloom because I think we've changed for the better (DN).*
>
> *Staff training has become a big priority. Experience now no longer counts. It's certificates on the wall now that count so you have to work towards that and all staff have to be committed and the educational side has now, if you like, really become compulsory (PG).*
>
> *It's been a centre for many years that responds positively to change and the whole work of the centre is developing and evolving all the time. I honestly find it really difficult to tell you what I think is linked to recent initiatives in particular, because inevitably those impinge on how you perceive the situation. (NS)*

When we asked managers if their centres had changed at all as a consequence of the recent national initiatives 56 (41%) said no and 75 (56%) said yes (see FIGURE 3 below).We asked them what the key changes were and 51 (38%) reported curriculum planning and assessment related to the Desirable Learning Outcomes (DLOs), 27 (20%) said OfSTED and 30 (just 22% but 38% of playgroups) referred to funding, changes to admissions and the subsequent changes in the age and number of children attending their centre (Figure 4). Interestingly, those near primary schools complained of admissions issues while those playgroups in rural areas without a nearby primary school did not comment on this. Only 10 centres referred to the integration of daycare centres with education (7 DC, 3NS). Three nursery schools referred to their becoming Early Excellence Centres.

The two big differences is the amount of paperwork and it's slightly more formal (PN).

We have found some of the school nurseries are taking the children a bit younger so they've got them there to get the money when they're 4. We've actually had parents come in and say that they've taken the place because they have more or less been told that if they take the place they're more or less guaranteed a place at the school. If they don't take the place there's no guarantee they can have the place at the school (PG).

The main issue has been OfSTED inspection because of the curriculum guidelines, observations and record keeping (DC).

Fig.3: Has your centre changed as a consequence of recent national initiatives?

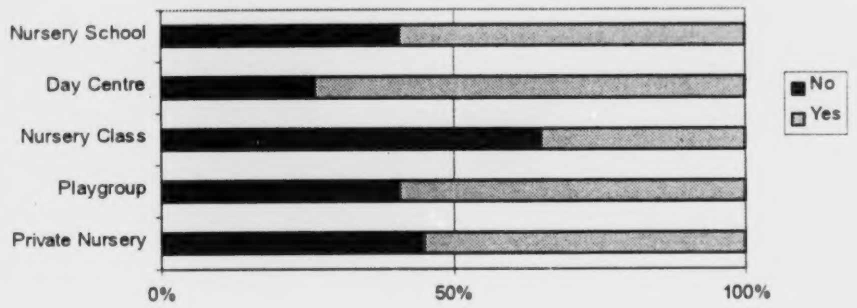
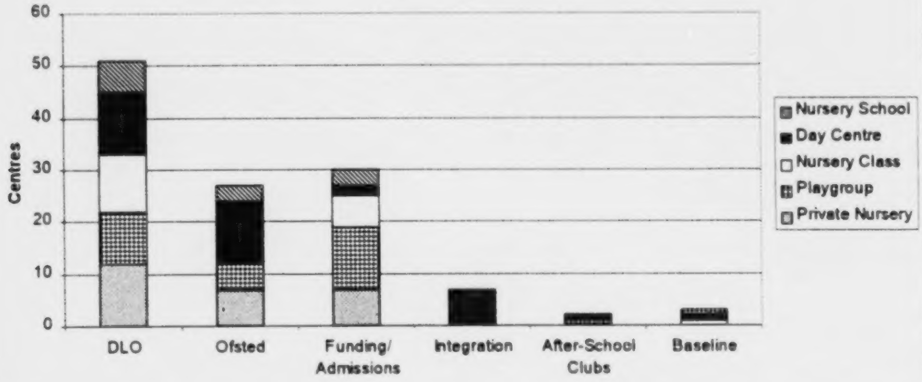


Fig.4: What has been the key issue in these changes for your centre?



EXPANSION IN PROVISION AS A RESPONSE TO THE INITIATIVE

According to the co-ordinators most of the authoritieshave plans to increase nursery provision but little or no progress has been made at all in the period 1997/98. Please see the Table in the appendices. In some regions, where provision has increased in one sector it has been matched by a contraction in another so some difficulties have been reported that are seen to pose threats to the partnership. One co-ordinator reported that 80% of their 4-year-olds were now in reception classes (V5). In every case this was seen as problematic, and to the voluntary sector in particular.

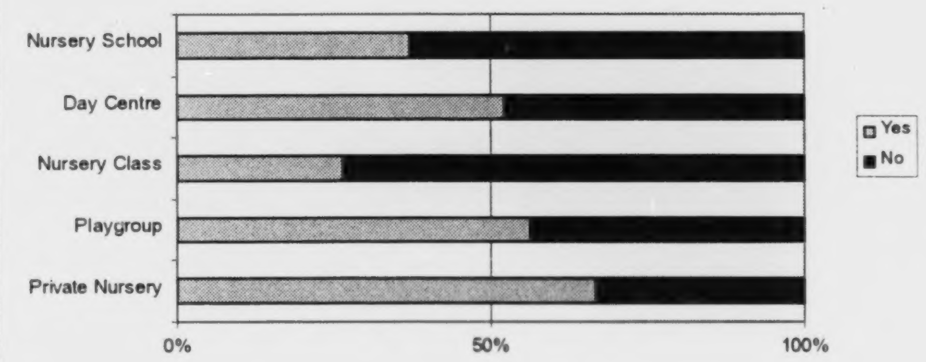
> *This has had an effect on playgroups – who are finding it difficult to recruit children of 3 years old and over (Y5).*

Nursery school and playgroup populations are therefore significantly younger than they used to be (by one whole year) – which is considered to be detrimental:

> *Other provisions decreased because of admitting rising 5s – we used to do this only in the summer term (X5).*

Our telephone interview data provided further evidence of these concerns. We asked the centre managers if they considered that enrolment had been, or would be, affected by recent national changes (for example the Early Years Development Plan (EYDP). Sixty four of them told us Yes (see FIGURE 5), 47 of the managers said that they are losing 3 and 4-year-olds to state nurseries.

Fig.5 Do you think enrolment has been/will be affected by recent national changes?



Some children are attending both state and private nursery provision (split placements) and one of the private school managers expressed concern about this. Managers of private nurseries, playgroups and day care centres are therefore admitting younger children to fill up their nurseries. The question of admissions emerged as the most controversial issue affecting centres and the relationships between them. Private nurseries and playgroups frequently said that schools are obliging parents, against their better judgement, to take up places early with the threat that if they do not the place may not be available when their child becomes of statutory age.

> *In September we will have no 4-year-olds at all. But we will have to fill up as soon as we can. So of course the next term when there are some 4-year-olds anyone from the outside won't get in. I am sure it's the same all over. We can't keep places for 4-year-olds. We depend on the money that comes in each month from our fees so we have to fill up as soon as possible.... So the way that it's going is that we get phone calls from parents of 4-year-olds when they get their vouchers but we can't take them because we're full of 2 year olds (PN).*

> *Many parents don't want to send children to school but they report the schools as saying that when the child is 5 there won't be a place for them. Headteachers deny they are doing this. Grant maintained schools are doing what they want (PN).*

We heard many more comments of this nature:

> *We had a dad came in and said 'I would like her to stay here a little bit longer' because we only take 16 children. The schools have got like 30 odd and he said she was just starting to build her confidence and everything up and she has just turned 3, the little girl, and he said 'I would have liked to have kept her here but I'm getting it free there.' There was an emphasis on the free part. ...The ones we get are the ones that haven't got the money so it's a shame because she would probably have done a lot better if she'd stayed here a few more months. Built her confidence up and then gone into a class with 30 odd children (PG).*

> *Increased provision has affected the numbers applying for places. We have more 3-year-olds in the nursery. If the LEA don't fund 3 year olds it will have a radical affect. We have taken in more 3 year olds than we would have liked to keep the nursery full (NC).*

> *Children are leaving younger and we are losing 4-year-olds like anything. It's had a very bad effect. They are here a shorter time so there's less time to build up relationships; some are only here a term. Schools are offering places and saying if the parents don't take it they won't get in later. There are 2 points of entry in September and January, so the children are very young even at the right time. Some schools have 1 point of entry. Schools are taking children in for ½ the day as they need to fill places (DC).*

One particularly damaging effect of this is that a range of provision is being lost entirely in some inner city and rural areas. Two of the co-ordinators referred to the positive effects of the new initiatives on childminders and the development of childminding as a business.

> *Childminders are increasingly seen as 'equals (Y5).*

> *After School Club & Holiday Schemes (for 4-8 yrs) are also being developed (Y5).*

PROGRESS BEING MADE IN PARTNERSHIP/COLLABORATION

The general perception among the co-ordinators seemed to be that things have improved significantly and that the new structures provide a basis for further development:

> *There is a clear realisation that everyone has to work together to do any real, local development work (V7).*

According to the co-ordinators, playgroups and schools do appear to be working better together in most of the authorities. One LEA co-ordinator reported on the high level of collaboration with the voluntary sector, where many school sites have playgroups (T4). But in one authority it was suggested that there was still insufficient recognition on the part of those employed within the maintained sector that private and voluntary sector could offer the same quality of provision (V4).

There was evidence of disagreement and a clear tension between some of the co-ordinators drawn from education and those drawn from the social services. The staffing structure in at least one authority was currently considered insufficient to support the partnership adequately in transforming the ideals into action:

> *The infrastructure is creaking at the seams (V3).*

Although fifty of the centre managers had been involved in setting up a partnership, the majority of respondents said that they had had no involvement. Others reported attending meetings and receiving information, but there was clearly some confusion about what the term 'Partnership' actually meant.

> *We've attended endless meetings. We're members of a nursery link group and they have been very much involved in it (PN).*
>
> *There is a local partnership… I have noticed I've had more communication from them, when meetings were and agendas and things like that. Whether that has come about because there is more interest in partnerships I'm not really sure (NC).*
>
> *...it's quite an exciting time being a part of what I consider is still the beginning stages of it. It makes you more aware of that wider world out there (NS).*

In total 48 respondents told us that they weren't consulted (40%PN, 41%PG, 35%NC, 35%DC, 26%NS) and 72 (53%) said that they were, 12 said they had received information and 3 told us that they knew nothing about partnerships. (1 PN, 1 NC, 1 DC). In terms of the impact of the partnership on the centres themselves there was little enthusiasm and some respondents would have welcomed the opportunity to contribute more:

> *Yes, but not how I would have liked to have been consulted. I would have liked to have been able to sit down and draw up a draft as well, not be sent a draft. I think it's something we all need to draw up together (DC.)*
>
> *It's a bit of a farce really. We keep getting mail about it and we keep going to meetings but really I have felt we haven't made the slightest difference. The LEA and schools have done what suited them, I don't think it has even particularly suited the children. It has been the staff at schools that Heads have been more concerned with. I can understand where they're coming from. But I really feel we are at the bottom of the heap and we really go along with it or get out of it. And so far we're going along with it (PN).*

When we asked how their centres had been affected by the introduction of partnerships 104 (77%) respondents said their centre had not been affected at all, whereas 17 (63%) of the nursery schools told us that they were affected.

> *We're very much involved in providing training for other providers and that is clearly a very important part of the work of the Partnership as well, supporting and disseminating good practice across the Partnership.*

Of the other 15 managers who said their centres had been affected there were a variety of responses e.g.

> *There is more paper work (PN).*
>
> *There is a poor relationship with local schools because of the snatch and grab over admissions (PN).*
>
> *'The LEA is paying for a teacher to work in the playgroup for a term' (PG)*

As one headteacher of a Nursery class said:

> *It's very early days to say whether it has been effective or not. We've only just got the final draft of the final document.*

One manager of an inner city day care centre said:

> *Yes we have been consulted. They're asking for a higher standard. They are asking for a hell of a lot more that we can achieve with the funding that they give us at this moment in time (DC).*

When we asked the managers how the Early Years Development Plans (or the plans being made for one) affected their centre and centre staff 76 (56%) said that they had*not* (or *hadn't yet*). Twenty two told us that the main effect has been changes in admissions relating to the new funding for 4-year-olds (5PN, 5PG, 8NC, 2DC, 2NS). Nine said the introduction of Desirable Learning Outcomes and OfSTED. Four referred to staff training relating to SEN and appraisal and 3 daycare centre and 5 nursery school managers referred to the integration of childcare into education. Two playgroup leaders commented on the Plans helping to make 'things clearer' and one emphasised how it had highlighted the need for training.

> *Frankly it's put a lot of pressure on the staff. No training was offered. We've had to step into a different mode of teaching. We're not teachers, we're child care workers and now we've stepped up a grade and we've had to train ourselves and it's just put a lot of pressure on us. And the focus puts pressure on the children as well, because now we're talking about, everybody's looking at, what these children can achieve instead of letting these children play to achieve. And also the workload has increased. There's more paper work so we are spending a lot of time on writing reports and tick charts. That time could be used doing something else with the child. I'm not saying it isn't a good thing because it is, but when people are going to make changes they need to first of all look at the amount of money they are willing to put into this to make these changes (DC).*
>
> *Being part of the Partnership has really led to involvement in looking at the Development Plan and feeling that this time we were very much involved and I was involved in reading the draft and writing bits into the plan so that we felt much more involved in putting the plan together. Obviously the knock on effects for the centre and staff are I suppose again more of the development of good practice across the whole of the city.*

The very significant contribution being made to the Early Years Development Plans by a limited number of individuals working within voluntary and private sector organisations was stressed by the LEA co-ordinators. Many local advisors/educators have been active in developing partnership forums but these have, in the main, been generated from pre-existing groups. Unfortunately, in one authority we were informed that this has had the effect of *reducing* the collaboration that was previously in place. The reasons given are revealing:

1. *We already had an Early Years sub-committee which had all sectors, 5 inter-agency panels in each area, there were playgroups on school sites, partnerships between schools and nurseries.*
2. *Due to the price tag on children there is more competition.*
3. *The Pre –school Learning Alliance lost its service level agreement (LEA's lump sum to them so they feel unsupported) – and not enough 4-year–olds.*
4. *Schools charge PLA to have playgroups on site whereas they didn't do this before – more formalised? (X6).*

Experiences and perceptions do appear to be very mixed, in different authorities different groups/agencies have been effective in developing greater co-operation/collaboration. In one authority the private sector was seen as having gained significantly from the increased information that they were getting, and the fact they had more 'voice' and more impact on policy (T6). In another authority the 'equality' of the partnership was questioned and a lack of consultation with private nurseries was considered to have had a negative effect as:

> *Nursery expansion has led to suspicion on admissions (V6).*
>
> *The last ¾ meetings of EYDP have been dominated by admissions policy – ¾ schools already want not to be restricted by this (V7).*

The dissension over admissions policies is seen by the co-ordinators as a major problem affecting the quality of provision directly as parents are considered to be 'pressured' to send their children to school. In one authority they had questioned the parents on why they sent their children to a school instead of a pre-school. Apparently the parents had very diverse reasons, and not all of them were negative:

> *Parents do it because they want more childcare, or will achieve more; for example, the reasons given include, 'I want my child to be in the school play'; 'friendships', 'fear of not getting a school place'. Parents are in need of good information so they can make good choices (V7).*

When we asked centre managers what implications there were for their centre in the move towards collaborative working 53 (39%) said they were unaware of this initiative or that there had been no change for their centre (17 PN, 17PG, 11NC, 7 DC, 1 NS). Nine managers said there were barriers and ill feeling between the private nurseries and state nurseries relating to funding, that there is a *'them and us attitude'.* Seven respondents from playgroups said they had been working with local pre-schools and had made links with school nursery classes. Two of the managers had received information from the Pre-school Learning Alliance about meetings. Another manager said that pre-school and playgroups are forging links, but not schools:

> *There's no real collaboration. They forget we're here. Primary schools look down on us (PN).*

The responses from nursery schools were notably upbeat by comparison.

> *We see ourselves very much in an advisory role. People are looking to us to take a lead. We have the private sector nurseries, the pre schools, the EY departments, family centres, all are looking to us for advice. To see how we do it really (NS).*

The conflict over securing 4-year-olds and related funding is proving to be a major barrier to partnership development:

> *Everyone should be more open, not watching their backs. It should be child directed not number directed (PN).*

In response to our questions about what might help them move further in the direction of partnership and collaboration 51 managers thought that exchange visits between nurseries to share expertise and good practice, and finance to pay for cover, would help collaborative working across sectors. Sixteen managers thought that structured and documented meetings would help.Twenty three managers considered collaboration to be irrelevant, unhelpful or they did not know what would help them move in this direction. 16 managers of nursery schools and another 16 managers of nursery classes said increased resources to buy time and cover for staff to facilitate exchange visits and to share expertise would help. Two nursery school managers referred to the need for more space for training. Five nursery school managers referred to the need to develop better relations with other sectors although 5 NSs (combined centres) were notably upbeat about the implications for the future of their working more closely and sharing INSET with colleagues in the private sector.

> *I think the development of the relationship with the private sector is growing enormously quickly and probably because we've provided some very good training and it's been free and people have become involved and therefore recognised what we've got to offer and we're learning from them as well. So I think that part is fine. I think it's an historical thing with the departments in all local authorities that people have got their own budgets and their own departments and I guess that in the long term we need to move to Early Years departments before we really get the people to work collaboratively.*

QUALITY ASSURANCE: ARRANGEMENTS AND RESPONSIBILITIES

Registration and inspection is considered by LEA co-ordinators to be playing a major role in quality assurance, both the annual inspection under the Children Act 1989 for the Voluntary, Private and Independent sectors and OFSTED inspections were cited as being influential. References were also made to analyses carried out at authority level to find the strengths and weaknesses identified in OfSTED reports in Early Years sections, in education nurseries and reception units. While joint standards are clearly being established across sectors, and education departments are taking the dominant role, there was little evidence and acceptance of central responsibility and for supporting those being inspected. Owen and McQuail (1997) highlighted similar problems when they reported on their evaluation of the first phase of the voucher scheme. The structures varied between authorities and within authorities according to the sector.

> *The PLA say they do their own (X9).*
>
> *The private / voluntary sector are left to their own devices – but an offer of support is made to them in case of difficulty (W9).*
>
> *There is no centralised mechanism for maintaining quality in day care, it's more localised (Z9).*

One authority had developed a quality framework for self-evaluation to be adapted for use by everyone (X9). Performance indicators are being developed and at least one authority was also trying to define quality with kitemarks – *'like Sheffield'*(Z9).

Baseline assessment training and baseline itself is also considered influential in the education sector (Z9, V9), and training more generally was seen to be playing a major role in improving quality:

> *LEA nursery schools (don't have LMS) were trained a lot. Done a number of research projects with nursery schools and units – EEL and others. Using all these elements to share this with more settings and an EEL element in 3 day inset (Z9).*

We asked centre managers if the new baseline assessment schemes would affect their centres and 92 (68%) managers said 'no' or 'not applicable', and 29 (22%) said 'yes' they would. The other 14 said they didn't know. It is perhaps unsurprising that those settings with younger children were less likely to have considered baseline assessment.

The issue of assessment is often confused with testing and many of our respondents demonstrated this. One respondent from a private nursery said:

> *We are trying to make our records as accurate as we possibly can do. So in a way we are testing, though in a fun way (PN).*

Managers of nursery schools and nursery classes, who often have a direct link to the primary school, reported the greatest involvement with baseline assessment.

> *Yes. The baseline assessment was a very onerous process for the reception class teacher this year and the authority are proposing that the nursery teacher will be part of doing it. I don't know the detail of that yet (NC).*
>
> *We've always been involved in that. We actually do baseline assessment just before our children leave and the results go up to the reception classes and they are then checked again but we feel we want to work together with our reception colleagues because of the information that we have on our children at the end of a year with us. So we have been involved in the Birmingham baseline for a number of years now (NS)*

One reception teacher, who had received training, and had '*already done the ones* (children) *who are going into main stream in September*', was extremely critical:

> *I think it's absolutely disgraceful it doesn't tell you anything about the child. Nothing to indicate what their creative abilities are. There's no art, no music hardly anything, if anything, on science. It's number and writing. Very little on maths I think the only mathematical thing is position. I've done it with my children and it doesn't bear any relation to the abilities of those children and where I think they are or where they will be going. But it has to be done and that's it. I will do the baseline assessment but along with that I will carry on doing the profile and the record sheet I'm doing at the moment because those together with the baseline will give a much fuller picture to the parents. There is nothing to say if a child has a medical problem or if the children have English as a second language (NC).*

LEA co-ordinators consider the review and development function of inspections to be especially important in quality assurance:

> *Early Years Training co-ordinator analyses OFSTED reports for particular needs and IATS (Inspection, Advice and Training Services) informed of these needs and respond to them (V9).*

When we asked centre managers about the implications of the inspection arrangements for practice in their centres 48 (36%) respondents said there were no implications at all, and 19 of these were managers of nursery classes (83% of the NC total). It may be that nursery classes inspected through primary inspection get a different focus as *part* of a bigger institution. While no specific question was asked, a small number of respondents did express concern about some inspectors' level of experience and their apparent lack of understanding of young children.

> *Inspectors compared 3 year-olds with the DLOs in October! Never taught this age group, one took a handful of jigsaw pieces and said; 'how many are there?' - to a 3 year old!*

A number of respondents cited clear changes that were made in response to inspection, 44 (33%) referred to curriculum planning and 19 (14%) to the assessment, evaluation and recording of children's work and progress. Fourteen (10%) referred to the increased paperwork and photocopying. Many respondents also referred to the stressful nature of the inspection process. One play group leader expressed despair, as she was finding the inspection process particularly difficult to understand and manage:

> *We are supposed to give the children 2½ hours of education a day. We are not qualified to do it. The OfSTED pack is mind-blowing. There is lots of paper work to do. I can't do it. I read it and it doesn't make sense. I don't feel qualified (PG).*
>
> *It's very hard when you feel that people are making judgements on you who perhaps may not have the necessary background (NS).*

Respondents in nursery classes reported little change:

> *We had an inspection in January. It was a whole school inspection and the nursery was inspected alongside the school. There were a few minor changes. We had already put in place a bilingual NNEB so we didn't have any major changes (NC).*

One day-care manager provided some insight into the organisational difficulties they perceive:

> *When OfSTED come they are just focussing on the 4-year-olds so it makes it difficult when you have to do a curriculum for all the children that you cater for. So I devise one curriculum for the 2 to 5 year olds. I don't break it down. You just scale everything down for the 2-year-olds, and step up a gear for your 4-year-olds. When you get OfSTED down it won't suit them. They expect you to do two sets of plans. That is time consuming. With the local authority they need to sit down with all their registration officers and come to one format (DC).*

We asked centre managers if the new funding arrangements would affect their centre and 27 (20%) said 'Yes', or that 'it might do' (11 PN, 7 PG, 1 NC, 4 DC, 4NS) while 86 (64%) said 'No' and 21 didn't know. Of those suggesting there would be an affect, 2 managers in private nurseries said they are better off in the following ways:

> *We are better off because we are keeping our 4-year-olds for next term. The funding for 4-year-olds in January increases the children's sessions so it is a benefit (PN).*
>
> *It has been made easier. We now apply to the LEA, which has eased paperwork. We are non-profit making and the extra cash helps (PN).*

Some playgroup leaders said that there were benefits from the new funding which included being able to offer more realistic salaries and therefore to keep staff for longer, to buy more equipment and to lower fees.

Others were concerned about a drop in finance:

> *We are taking in younger children. The ratio is different – fewer children less money (PG).*

Several respondents referred to the timing of the claim system leaving them out-of-pocket:

> *We can't reduce fees because not enough children qualify. Some children will be with us for 1 term only once they are 4 and we won't get funding. We can't plan the budget with funding in mind because we never know (PG).*
>
> *At present the government pay 50% of the fees for parents who are on benefits. They pay this back termly so we are out of pocket (PG).*
>
> *On the 14 August we had to state who we had on role. Last week we took on 3 new children. We can't claim for them until September. We won't get the money until November. The timing is wrong (PN).*
>
> *Very difficult. I did a head count today but I have children starting in 2 weeks time. What about funding for them? I am out of pocket (PN).*

The delay in funding was also mentioned by a primary headteacher:

> *There is a financial loss for those children we will admit in September. We won't get the money for them until January (NC).*

The issue of funding for 3 year olds was also raised repeatedly:

> *If they start funding 3 year olds they might stay and wouldn't go to nursery (PG).*

One playgroup leader described the affect that funding, and the link between funding, inspection and the Desirable Learning Outcomes, was having on her playgroup as follows:

> *Ideally I think we'd like to get rid of the 4-year-olds now, because they have different demands from the little ones and we are better at being a playgroup, and so if we did get rid of the 4-year-olds we wouldn't have any funding. We're definitely not a nursery school so it is never mainstream funding anyway. The LEA has also gone over to a once a year intake so they disappear in September and any 4-year-olds that might emerge, well they could be 4 in October of course, but usually it's not until the last term of the year that they turn 4 so the funding is never for the whole year. This year it's only been for the last term (PG).*

Only 4 of the nursery school managers believed that the new funding arrangements would affect them, but in response to the question one of the managers said:

> *They might affect us in the sense that one of the gaps in provision in this area is for our under 2's and we're looking for a partnership with a voluntary body to set up some provision for under 2s so that would affect us. The funding we've had from the DfEE for the EEC has certainly affected the centre and it's increasing the training we are doing for other providers and it's also given us the responsibility to disseminate good practice in other ways as well. We're actually providing targeted training for other providers in their own settings as well as here. We're looking constantly for funding opportunities so that we can actually develop the work that we are doing (NS).*

TRAINING

The integration of training for the maintained and the private and voluntary sector is considered especially constructive by LEA co-ordinators. But authority training strategies are at different stages of development (see appendix) and this clearly reflects the different standards of prior provision and the different levels of new resourcing available from the Standards Fund:

> *Private Sector can now access and do use our inset – some free, some fee (Y5).*

The training provision on offer seems to be extremely varied. In one authoritytraining has been provided by an advisory teacher and an established multi-agency training group. LEA funding was also being released to support training. One authority referred to two 'senior managers' who had been released for two days a week for two terms (Z4), another authority had created an Early Learning document and video training pack for all providers– *'an example of introducing quality to all centres but not integrating care and education'*(V4). In one authority:

> *Everyone with 4-year-olds gets 3 day modular training – in every kind of provision (1 person from each centre), we have used a cascade model to share good practice.*

One authority referred to a 'contract' between providers and Local Authority funding for training – so that training is *'of a particular standard' (W9).*

While the LEA co-ordinator comments and the nursery school manager comments were generally positive, the centre managers from other sectors were far from satisfied with the new initiatives for staff development. It may be that the co-ordinators are more optimistic because they have sight of the forward planning. Many of the nursery schools had established INSET provision and many of our respondents were themselves involved in providing training. The other managers reported that the main implications for staff development are:

- *The cost and difficulties of providing cover to release staff to attend daytime courses.*
- *The reluctance of some staff to attend twilight sessions because of problems with child care for their own families, because they are too tired after a long working day or because in rural areas they often have to travel a distance to reach the training venue.*
- *The high cost of courses particularly for those in the private sector and play groups. Most managers provide INSET and rely on the expertise of existing staff to share good practice.*
- *Managers of playgroups spoke of the reluctance of some staff to attend courses, particularly long standing members of staff who do not consider additional training necessary. Some managers too thought their staff sufficiently qualified already although they were a small minority.*
- *Managers of nursery classes spoke of the frustration of attending training that is now open to all providers and can be simplistic and repetitive (aimed at the lowest trained). Some play group leaders thought courses were sometimes too hard.*

Most managers said their INSET was ongoing andthat staff are keen to attend courses and update their skills and qualifications. Managers mentioned specific trainingstaff have received in the areas of baseline assessment (6NC, 1NS) and with respect to the Desirable Learning Outcomes (3PN, 3PG, 5NC, 5DC, 5NS).

Three private nurseries, one nursery school, and 6 playgroup managers referred to members of staff who had upgraded their NVQ qualifications. A few respondents commented that they had shared training with other providers and this had been valuable. 14 managers (1PN, 3DC 10NS) reported attended training using the LEA's Early Years policy document which they then shared with their staff through their own INSET. Ten nursery school managers referred to their own training and 6 references were also made to the strategic approach through School Development Plans (SDP) and individual development.

The challenges faced by different sectors are illustrated in many of the managers comments:

> *We're just spending more on it which means there's less being spent elsewhere (PN).*
>
> *A headache really because my staff, well one's been here for 25 years and one for 12 years and they have a wealth of experience but at nearly 60 they don't really want to retrain. So there's a lot of resistance on their part and I don't think it's fair if I go on the training all the time and leave them to run the place. So I suppose it would be different if we were all younger. We've been on one training all together. We closed the playgroup for the day and that was nice and also quite eye opening...We really go to keep them happy because we don't feel it's a great need for us (PG).*
>
> *Well basically there's no money in the LEA. We have really been on very few coursesmyself and the nursery nurses. As a whole school staff there hasn't been money for going off on training days. Having said that we did have one day where our cover was paid for by the LEA which was about the baseline assessment so we did have one free course (NC).*
>
> *We have staff who've done their NNEBs like 5, 6, 10 years ago. The only other training that was offered was the one-day Inset training that we get from the LEA. So unless you've got the NNEB or your child care qualification the people don't tend to go on any further qualification because you come to a level in child care where you come to a level when you become an organiser and that's it. But now that we're teaching the children people want to go on and get teaching qualification but there's no money. I am training my staff and I am encouraging them to do courses and we will offer any support we can. In some cases we'll pay for half the course and offer them time to go off and study (DC).*

When we asked what would help them improve the training on offer 63 managers said more funding, to cover the cost of good quality training courses and to pay for cover. Concern was also expressed about the quality of cover available. Time was also mentioned by almostall of this group. (12PN, 17PG, 14NC, 9DC, 11NS). Eight of the nursery school managers said funding was specifically needed to provide training opportunities for Nursery Nurses, 4 said that the situation was the same for Learning Support Assistants and non-teaching staff and that the lack of funding for these workers made joint training difficult to run. Two respondents spoke of a lack of parity for nursery nurses and one mentioned their lack of career structure. Ten respondents referred to the need for shared training with other providers (3 PN, 3 PG, 1 NC, 1 DC, 2NS). Another 16 respondents said there should be more courses run by the LEA providing information about when and where this was happening well in advance to support early planning (6 PN, 1 PG, 1 DC, 8NS). Some respondents expressed concerns about the quality and coherence of some of the training while others were very positive about their ongoing inservice training. However, as we've mentioned earlier Table 8 (see Appendices) suggests that the LEAs see this as an area for substantial development over the coming years. Several managers across the range of provision (except for nursery classes and nursery schools) were anxious to have another tier of qualification above the National Vocational Qualifications in child care and education. They commented on the gap between the NVQ and teaching qualifications.

THE INVOLVEMENT OF QUALIFIED TEACHERS IN EARLY YEARS PROVISION

The LEA co-ordinators reported on the progress being made in terms of increasing the involvement of qualified teachers in earlyyears provision. The experience varied across the authorities and they were also developing different approaches to the problem. Apart from increasing the number of teachers working within settings, the development of partnerships between schools and other providers, and the support provided by advisors and training programmes were cited in response to probing on the issue (see appendix). Throughout the interviews it was interesting to note that the co-ordinators with a social services background tended to be less enthusiastic about teacher involvement, and in one authority there was open disagreement between the two respondents that were interviewed. In another authority the (social services) co-ordinator asked: *'Why do we need teachers if our settings have passed (sic) their OfSTED?'* Progress appears to be quite limited, although some opportunities are clearly being exploited when they arise (see Table in the appendices).

> *We are struggling in some settings to keep teachers in nurseries, but this might change after schools strategic review which might make more pupil numbers in some schools and therefore more teachers (T10).*

In one authority, because the schools had rejected their admissions policy, the LEA had provided £180,000 cushioning money for the loss of 4-year-olds:

> *Schools should not (now) have to lay teachers off but should have teachers with more time so theoretically there is a possibility of outreach work with the voluntary/private providers e.g. comparable recording systems, curriculum etc. (V10).*

THE EFFECT OF NEW INITIATIVES ON PARENTAL CHOICE

While 52 (39%) of our centre managers told us that parents now had more choice, 32 (24%) said that they had less (12 PN, 8 PG, 6 NC, 6 DC) and 41 (30%) said that it hadn't changed.

Yet again the issues surrounding the uptake of 4-year-olds in schools were significant:

> *I think it's getting much harder when children get to 4 for parents because there is a huge pressure to take them out and put them into state education, be that the nursery class or be that the reception. I think there is a big pressure on parents particularly when your choice is limited as it is, and if you get the offer of what's considered to be a good school and you've got no guarantee that place is going to remain there for 6 months, then parents are obviously under pressure to take it. I think in many respects their choice has been limited more because they don't have the option that they want really in terms of keeping children in nursery education or day care that bit longer (PN).*
>
> *I think personally they've got less now. In a sense they're frightened to say 'I don't want that place. I want my child to stay there' because they're frightened the child won't get into school when they're 5 (PG).*
>
> *With the day nursery at the centre they have more flexibility of sessions. With the rising 5s in schools they have the option whether to stay with us or go. I would say they have more choice though not always for the better (NS).*
>
> *Yes, in the city they do have more. It's different within the villages. There are no choices. So it depends on cost and where you live (PG).*
>
> *I think there's less choice. I'm a 30-place nursery and I have 194 children on my books. I reckon not even a half of that lot is going to be able to get into here (DC).*

THE EFFECTS OF NEW INITIATIVES ON PARENTAL INVOLVEMENT

Both the LEA co-ordinators and the centre managers agreed that there had been little effect upon parental involvement so far.

> *In many ways for working parents the choices offered have caused more confusion. The opportunities for 4-year-olds to have a full-time place at school has not been an easy choice for working parents, as there has not yet been the full development of out of school care for the Under 5s. This is now happening, but slowly (Y12).*

In two authorities there has been a long-term problem with provision for ethnic minority families in two inner city areas. The shortage of local nursery education has meant that they have to travel further, and have experienced more racial harassment due to this.

Our survey suggests that the new initiatives have had little effect on parental involvement, 104 (77%) of the centre managers said there was none and only 30 (22%) said that there had been improvements. The nursery school, private nursery andplay group managers tended to be upbeat about their prior performance but many of the other managers described the specific problems that they faced. Interestingly most of the managers demonstrated an implicit understanding of parent involvement as 'them' helping 'us':

> *No because I find them lethargic anyway. We try to involve them in reading sessions but no I wouldn't say there was a dramatic urge for them to come forward or to help more.' (NC)*
>
> *'With community nurseries and playgroups, we have always had a problem with parent involvement. The parents just don't have the time to put as much into the nursery as we would like. They don't see us as schools. They see us as a place they drop their children off, we teach them hygiene, good manners and they don't see us as being educators. So they don't put the same input into the nursery as they would into schools (DC).*

According to the LEA co-ordinators, task groups have been formed, and outreach workers have been active but little progress is to be reported at this stage. The quality as well as the amount of involvement to be found in the authorities seems to vary considerably. In one authority there has always been parental involvement within the voluntary sector as the parents have always formed the key part of their Management Committees. This has been extended to some centres with places for parent representatives. In another authority some increase was noted due to the institutionalisation of parent focus groups, and a big partnership group. Increases were also noted in relation to the number of voluntary parent-led organisations e.g. playgroups, parent and toddler groups had increased (W13).

The co-ordinators referred to the 'representative' parents invited to contribute to the Early Years Partnerships. But there was a feeling that less people were coming forward from playgroups because they had more to do - leaders were resigning and not coming forward because of the increased planning / record keeping etc. they were involved in. Other initiatives like home-start, the relevance of the Effective Early Learning project (a practice development project), Parents and Children Reading Together and 'babies need books'; health forums and family literacy projects were cited as influential.

IMPROVEMENTS IN CHILDREN'S EXPERIENCE

Again, the most significant changes have been related to the movement of 4-year-olds into schools and the introduction of the early years curriculum appears to be regarded as only of secondary impact. The poor staffing ratios in reception classes is seen as particularly worrying and reception children in vertically grouped classes are considered to be suffering especially (X14). Concern was also expressed regarding the increasingly skewed (3/4-year-old) age balance in Nursery Schools. Many of the older, more experienced children are now in schools and the 3-year-olds are left without the benefit of the older role models/influences. Mixed views were expressed regarding the effects of focusing attention more closely on curriculum. In one authority it was felt that some playgroups were becoming inappropriately formal. In another it was felt that Local Education Authority (LEA) settings had improved because they had to be explicit about what they wanted the children to learn. Most authorities felt that the influence was positive. According to the LAs own inspection and advisory service evidence, the increasing emphasis upon quality has also changed children's experiences, although interpretations of this may still vary between authorities:

> *The Desirable Outcomes have changed reception classes that now focus less on National Curriculum, especially in more affluent areas (T14).*
>
> *More nurseries are putting in number lines etc. (T14).*

What is considered appropriate provision for nurseries is also being confused due to perceived OfSTED requirements (T14). It is also being challenged by other strategies employed to raise standards e.g. the National literacy/numeracy strategy.

We asked the centre managers if they felt that the experiences of children had changed and their responses were varied. Seventy four (55%) said that they had not and 59 (44%) said that they had (see FIGURE 6). The Desirable Learning Outcomes were mentioned and several managers mentioned an increase in technology provision as well.

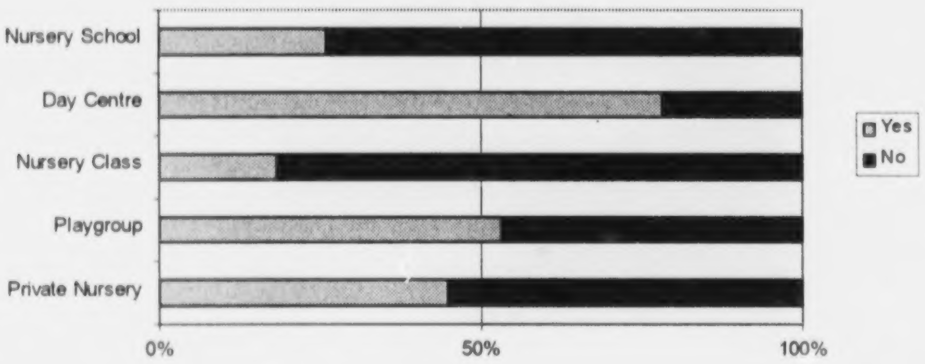


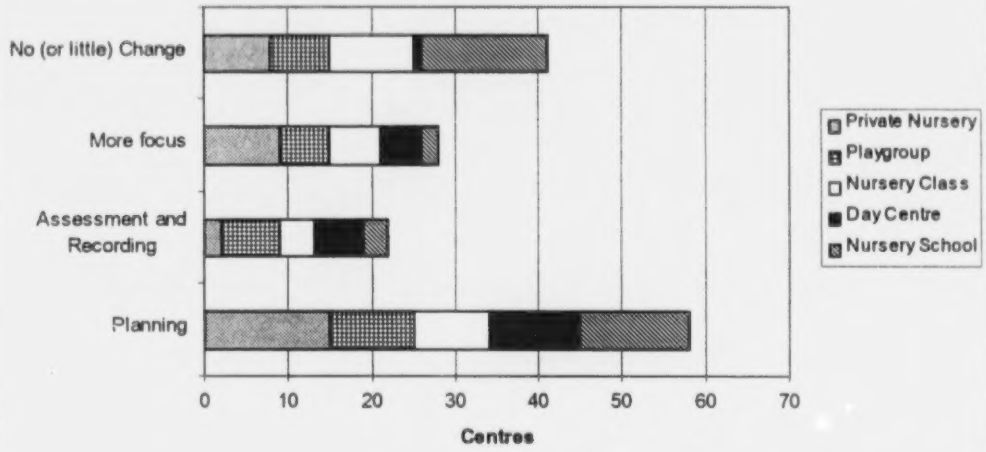
Fig.6: Do you think that the experiences of the children have changed much?

> *Yes. They have more available to them. Particularly in technology. They have access to cassette recorders, cameras and computers and opportunities to play with and investigate these things (PN).*

> *Children are beginning to get a more balanced range of experiences. We are picking up on an awareness of groups who are avoiding some areas of activities for example girls avoiding maths. There is more structure (NC).*
>
> *Dramatically over the last 2 years. Experiences were very limited. Staff development has been involved too. I have been here for 2 years, if we had had an OfSTED then we would have failed. (DC)*

When we asked centre managers specifically about the impact of the Desirable Learning Outcomes on their centre 52 respondents said that it had had an effect upon their planning (15 PN, 10 PG, 9 NC, 11DC, 7NS) and 23 of these managers specifically mentioned assessment and recording. Thirty managers said they are 'more focused' and 32 reported little or no change in their centre (4PN, 2PG, 1NC, 1 DC, 14NS). Surprisingly 2 of the playgroup leaders said they did not know about Desirable Learning Outcomes (see FIGURE 7). Six managers said the Desirable Learning Outcomes have had the effect of narrowing children's experiences and pulling them away from play (1 PN, 2 DC, 3NS). Two managers referred to improved equal opportunities.

Fig.7: Impact of DLOs on Centres



> *For us it's been very much about the way we plan activities. We've included the Desirable Learning Outcomes on our activity planning, on our profiling of the children and on our theme planning so in that respect we're very much aware of it. We're very much looking for those outcomes for the children but I'd like to think the children's programme hasn't changed dramatically because we felt we were already offering the children an awful lot in terms of education anyway. So I think it may be the articulation of it, it may be the way we are thinking about it, but I think in the day to day experiences of the children it won't have changed dramatically at all (PN).*
>
> *I think the children have taken it all in their stride really. You see it hasn't been all that much different really for the older children. Because for at least the last 5 or 6 years we have always treated the afternoon children like a reception class in a way. We have always drawn*

> *and painted and joined dots and tracing and learned about the world around us and done experiments, so I really don't think the children have noticed a little bit more creeping in (PG).*

Some respondents had an interesting perception of pedagogy, and reported that they were finding the balance between 'play and work' difficult to manage. This response was particularly notable among the playgroups and their comments suggested that they may be experiencing difficulties when it comes to combining the two. This is interesting because these practitioners' perceptions are that DLOs are about teaching and that teaching is about formal, didactic education, even though this is not the intention of the DLOs document. The following is a typical quote from a playgroup leader:

> *Ours is learning through play so we don't force anybody to sit down and do anything. The only time they actually were sitting for any length of time is when they're doing milk and biscuits. We actually do counting, the date, the month, what the weather is like. We ask them, they tell us. To them it was a game. So what we've had to do in a sense is to get the older children sitting down. Well we're trying to get them to write their names but this is going all against what we in the first place were. You weren't allowed to teach them to write or anything. If the child came up and asked we would sit and do it with them but otherwise...(PG).*

Consistent with other research findings (Sylva et al, 1992; Moriarty and Siraj-Blatchford, 1997), the vast majority of respondents from nursery classes said that the Desirable Learning Outcomes had helped to focus thinking, planning and assessment:

> *Looking through the book it's actually what we have been doing for years but it's never actually been named Desirable Outcomes. All our planning is child centred. When we plan activities we know why we're doing this particular activity, we know what we want the children to learn from it and we evaluate each week what has been going on the previous week .So basically it hasn't had an impact. It has perhaps highlighted that we have been doing what we are required to do (NC).*
>
> *Our plans. It puts in a neater context what you're doing, where you're going and the assessment and where the children are at and where they should be going (NC).*

Within day care centres respondents expressed some concern about the balance between care and education. Most however said that the Desirable Learning Outcomes had had a positive impact on their centre.

> *It has helped in specifying some of the ingredients in learning. It has helped us to plan, record and assess and helped us to clarify areas of the curriculum. Cover of the basic curriculum is assured (DC).*
>
> *It has been dramatic. Before we concentrated on the physical, intellectual, social and spiritual. The headings have changed and brought things together. It has brought a dramatic change in the children. We have core group activities with physical or maths activities every session (DC).*

For nursery schools the impact has been slight, with respondents referring to little more than a curriculum review and minor changes in planning.

> *I wouldn't say there's been any great changes because we always used to plan to the areas of experience in Starting from Quality. And the Desirable Outcomes in a way, slightly different because they've got different headings but the actual content didn't change much, although we've had to change our planning slightly (NS).*

When we asked the centre managers if they envisaged taking more or less of an educational emphasis in their centres in the future 62 (46%) respondents said more 71 (53%) said the same, 1 'didn't know' and 1 (PG) said less (not surprisingly because; *'there are no longer any 4-year-olds attending')*. Twenty one (78%) of the nursery school managers told us they were doing a great deal already and most could see little opportunity or that there was anything to be gained from an increase.

> *It's about getting a balance and remembering that children come first. We put a lot of emphasis on children being happy and a lot of emphasis on first hand experience and we firmly believe that unless a child's happy and their well being is good they are not going to learn. And yes there is an educational emphasis because at the end of the day children have got to take the next step in the system and you've got to .. that's what it's there for to give you a structure. It will be a matter of looking at the new learning goals whether we will have to make any changes or not. Staff start with the child (NS).*

Concern was generally expressed about the loss of play and there was also concern in the day care centres about the perceived shift from care to education. Amongst private nursery managers there was a range of views:

> *Probably more because of the way it's been delivered to parents. Their expectation of the educational side has grown. We have to demonstrate to parents what we do. The danger is that it will make it more formal and it's getting away from what we do. Care is uppermost in our nursery (PN).*
>
> *We can't go for much more. We cover more of the year 1 curriculum in the nursery now (PN).*
>
> *They definitely want more (OfSTED). We have children from 2 ½ and the inspection looked at the class as a whole. Children are pushed at a very early age now (PN).*
>
> *There is definitely more. It has changed so much in the last 12 months. Our standards have been reviewed and we are achieving a higher standard. We will get better as we gain experience (PN).*

Among playgroup leaders the main concern expressed was the anxiety that the focus on play would be lost.

> *I think it will be the same really because we carry on and do what we do. If something comes out and we think that's a good idea then we'll join in. We've got younger children now. Personally I think they're trying to get them to learn too much too soon. (PG).*
>
> *It's mainly an awareness that we should certainly involve ourselves more with the children and hand them the tools for describing what they're doing. We rather resist seeing ourselves as teachers though. We still want to think of ourselves as carers or as companions because we feel certainly with the 2 and 3 year olds there is enough formal teaching ahead of them and we would like to keep the emphasis on play and on exploring with us there as enablers really (PG).*

> *We hope to get a balance between education and play. We feel play is valuable to children, especially younger children. The lessons and skills learnt in play are essential to future life (PG).*

THE PERCEIVED EFFECTS OF THE EARLY EXCELLENCE CENTRES

The EPPE study has 5 Early Excellence Centres (EEC) in the sample of nursery schools. In all there will be a total of 25 such centres, not all of which have been selected. Local authorities often devote a great deal of time to writing a proposal for such a designation for one of their centres. The EECs in our study were, as to be expected, very positive about the future and their own role in shaping early years provision both locally in terms of training and disseminating good practice and nationally through exchange visits. While some respondents clearly saw the centres as potentially divisive, the general view of LA co-ordinators was that the national recognition as a centre of excellence was very positive. References were made to the misunderstandings of schools – where they have felt their contribution will be overlooked.

THE PERCEIVED EFFECTS ON SPECIAL NEEDS PROVISION

In the process of developing the EYDP one authority identified a significant gap in the Service it was providing for playgroups with children with special educational needs (SENs) (Y2). This was now being attended to. Each of the respondents reported on training being carried out across all sectors, using the Code of Practice, surgeries and drop-in provision in several geographical locations. One authority referred to the setting up of a development fund for the voluntary sector, to support their work with special educational needs children (Y16) The development of a children's database in one authority (a children's information service X16) was also seen as a positive step forward. In one authority SEN as a whole had '*not really been well addressed yet*'(V16).

Some concern was expressed regarding the likelihood that children-in-need might be labelled as children with special needs and concerns were also expressed about the lack of resources particularly for profoundly disabled children. One hundred and ten (81%) of our centre managers felt that their practice had not been effected by the changes (27 PN, 23 PG, 23 NC, 10 DC, 27NS). Twenty four (18%) said that they had. Responses were clearly influenced by the presence, or otherwise of children with identifiable needs in the centres.

> *No we haven't got any children with SENs at the moment in situ. We did have up until January of this year. We would say that's an area where we're looking to improve our own training and expertise. We're just in the process of setting up a session with the LEA trainer who specialises in SENs because that's an area where we think we haven't got the expertise ourselves. But certainly I've been made more aware of the Code of Practice in relation particularly to OfSTED but not in terms of our practice I don't think (PN).*
>
> *No it hasn't. We have always catered for children with special educational needs (PG).*
>
> *Not really. We have implemented a more precise screen but that was in response to concerns that we were feeling that perhaps we weren't picking up on things soon enough in an official way. We were doing things unofficially with parents, which is obviously the beauty of nursery because you do get the chance to work very closely and get personal relationships going. We had an OfSTED inspection in 1996 and it was one of the things they raised (NC).*

> *Yes, because now SEN is much broader and I think we will find it hard to break down which children do have special educational needs. I have just finished a course and I'm still very confused. It's something I will have to feel my way through very carefully because it's very easy to label a child when they're not (DC).*

> *We are keen to provide as inclusive an education as possible. We have a couple of staff who have had portage training this year which is really good. (NS).*

> *Our practice has evolved on SEN. We've actually got a pilot project involving under 3s children who've got special needs. We're also working on an inclusive pattern to include special needs children and also parents are very involved (NS).*

We asked the managers if their centres were responding to the Code of Practice and 104 (77%) of the respondents said they were following it and had appropriate systems in place. All of the nursery schools said that they were following the Code of Practice with systems in place to meet the full requirements. These included a Special Educational Needs Cordinator (SENCO), who was frequently the headteacher, the use of Individual Education Plans (IEPs) and a network of additional support from other professionals. In the private nurseries 8 managers said they have not had to use the Code of Practice because they either do not have, or they do not cater for, children with special educational needs. Another 5 managers did not know what the Code of Practice was and 2 said they had their own policy. Three managers said that they had support and guidelines from the under 5s officer and 2 felt that it wasn't applicable to them. All of the managers of nursery classes said they have systems set up to meet the Code of Practice and all but 1 of thedaycare managers said the same, the manager of one daycare nursery said she was unaware of the Code of Practice.

> *We have a system in place. We have meetings twice a term for the whole school and we go through the forms and update them (NC).*

> *We are quite far ahead in this borough. We have good support systems and well-developed structures in line with the code of practice (DC).*

The only providers linking the Code of Practice to theIEPs and planning in a systematic way are the nursery classes, this might be because of a wider policy link with the primary school. Daycare centres seem to rely on outside agencies and individual support assistants. Centres across the range of providers did say they followed the Code of Practice but some of them found it hard to explain how they did this. Some children are coming into settings having been identified by health services but it would also seem that some children who might need early identification of special needs are not 'picked-up', some providers are missing this opportunity.

LOCAL PRIORITIES

Training and standards are the main priorities across the authorities (see Table in the appendices). Concerns were expressed by the co-ordinators about the inadequately trained staff, and the poor quality of some inspectors. References were also made to an action zone bid (W14) and the perceived need to get 3 year olds into education settings as soon as was possible after they've been in day-care (W14).

SUGGESTIONS FOR NATIONAL POLICY

All the co-ordinators had something to contribute to our final question offering them the opportunity to identify 'a wish list' for the future. Local authority earlyyears co-ordinators felt that it would be particularly helpful if reception classes were excluded from the national curriculum. The Desirable

Learning Outcomes should be in place for reception year and it was suggested that the National Curriculum should start in Year 1

> *The National Literacy strategy works against this. Children that start in the Summer Term have a lot to do in that term. There is a lot of anger about literacy hour for 4-year-olds (W14).*

There is a perceived need for the development of a common entitlement for parents and children that provide continuity in provision 0-5. It was also felt that national standards need to be set for staffing ratios for 4-year-olds. The co-ordinators referred to the need for a concerted drive towards integration. A more uniform approach to registration and inspection is also needed across the country.

The co-ordinators would also like to see:

- *Nationally recognised qualifications for childcare workers across all settings.*
- *Nationally recognised qualification for inspectors and clearer guidelines.*
- *National standards for registration and inspection to include care and education.*
- *Central government strategy on training.*
- *Funding to support infrastructure development.*

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APPENDICES

Table 1 The sample according to region and type of provision

	Private Nursery	Playgroup	Nursery Class	Day care	Nursery school
Inner City	5	6	3	7	7
North East	3	5	4	8	5
East Anglia	10	8	5		4
Mid-Shire	8	8	7		5
West Mid.	4	5	4	8	6
TOTAL	**30**	**32**	**23**	**23**	**27**

Table 2 Main characteristics of effective pre-school practice*

	Qualif.	PSE	Safe	AER	Relat.	Play	Care	Res.	Ind. Needs	Train.	Team Work	Enjoy	Curric.	Equal Opps.
PN	13	5	11	4	6	5	13	8	9	4	1	1	3	1
PG	6	16	11	1	6	9	4	4	5	3	3	8	4	1
NC	10	18	3	21	11	6	1	8	6	1	3			1
DC	13	4	12	7	7	5	6	4	4	9	5	3		1
NS	12	3	6	6	13	4	5	4	7	2	6	7	3	8

*could name more than one

Table 3 Centre changes as a consequence of recent national initiatives

	No	Yes
PN	13	16
PG	13	19
NC	13	7
DC	6	17
NS	11	16
TOTAL	**56**	**75**

Table 4 Key issues in these changes for your centre

	DLO	OfSTED	Funding/ Admissions	Integration	After-School	Baseline
PN	12	7	7			
PG	10	5	12		1	
NC	11		6			1
DC	12	12	2	7	1	1
NS	6	3	3			1
TOTAL	**51**	**32**	**30**	**7**	**2**	**3**

Table 5 Has enrolment been affected?

	Yes	No
PN	20	10
PG	18	14
NC	5	14
DC	12	11
NS	10	17
TOTAL	**65**	**61**

Table 6 Have children's experiences changed?

	Yes	No
PN	13	16
PG	17	15
NC	4	18
DC	18	5
NS	7	20
TOTAL	**59**	**74**

Table 7 Impact of Desirable Learning Outcomes on Centres

	Planning	Assessment and Record	More focus	No/little Change	Less Play	What are DLOs?	Others
PN	15	2	9	8	1		2
PG	10	7	6	7		2	7
NC	9	4	6	10			2
DC	11	6	5	1	2		7
NS	13	3	2	15			2
Total	58	22	28	41	3	2	20

EFFECTIVE PROVISION FOR PRE-SCHOOL EDUCATION (EPPE) PROJECT

INTERVIEW FOR CENTRE MANAGERS

Thank you very much for agreeing to talk to us about your pre-school centre. There have been many recent changes in pre-school education and we are very eager to hear how these changes affect your centre. We are aware that changes have occurred at a different pace in different centres and we realise that centres will have different experiences of change.

1. Has your centre changed as a consequence of recent national initiatives? What has been the key issue in these changes for your centre?

Partnership and collaboration

2. Have you been involved in the setting up of Partnerships?
   How has your centre been affected by the introduction of Partnerships? Were you consulted?
3. How has the new LEA Early Years Development Plan (or plans being made for one) affected your centre and staff?

4. What have been the implications for your centre of the move towards collaborative working across sectors? What would help you move in this direction?

5. Do you think the enrolment in your centre has been/will be affected by recent national changes? (for example, by the Early Years Development Plan).

Inspection, funding and assessment

6. Will new funding arrangements affect your centre? In what ways?

7. What are the implications of the inspection arrangements for practice your centre? For example, Nursery education inspection/school inspection - Section 13 revised/Children Act inspection?

8. Will the new baseline assessment scheme affect your centre?

Children's experiences

9. What has been the impact of Desirable Learning Outcomes on your centre? Do you envisage more or less educational emphasis at your centre? Do you think experiences of children have changed much?

10. Has your practice concerning children with Special Educational Needs been affected? How are you responding to the Code of Practice?

Staff Training

11. What has been the implication of these new initiatives for staff development? What would help you improve training?

Parents

12. Has parental involvement changed as a result of new initiatives? Parent choice?

In conclusion

13. What would you say were the main characteristics of effective nursery practice?
    Has your centre changed in its approach to these key areasas a result of recent initiatives?

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EFFECTIVE PROVISION FOR PRE-SCHOOL EDUCATION (EPPE) PROJECT

INTERVIEW FOR PERSONS RESPONSIBLE FOR IMPLEMENTING EARLY YEARS DEVELOPMENT PLANS IN EACH OF THE EPPE REGIONS

Your role in recent initiatives

1. What is your position in the local authority organisation and what is your role in the Early Years development plans?

2. Has your role changed over the last year or so as a consequence of national policy in early years provision?

3. What benefits have you seen in your area as a result of recent government initiatives?

Collaboration and partnership

4. How far has your authority succeeded in integrating early education and care? How much is due to the initiatives of central government and how much to local initiatives?

5. In what ways has early years provision expanded in your authority as a result of recent initiatives? Have different types of provision been affected differently?
   Probe: different sectors, geographic parts of the authority, age of children.

6. Are providers working collaboratively across the sector? What prompted this?

7. How have the co-operation between local authority departments and voluntary/private agencies been affected? Is there more co-operation across the authority?

8. What have you done about consultation with the private and voluntary sector? What steps did you take and how successful were they?

Quality assurance and training

9. Who is responsible for quality assurance in Early Years provision? What strategies are in place for improving the quality of provision? What arrangements are there to monitor quality at centre and local authority levels?

10. Have there been any developments to change the involvement of qualified teachers in Early Years provision? How will this be developed in your area?

11. What is your training strategy in the local authority plan?

Parents

12. Has parental choice been affected by recent changes in your authority?

13. Has parental involvement been affected?

Improving children's experiences

14. How have children's experiences in pre-school settings changed as a result of recent initiatives?

15. How has (or will) the Centres of Excellence initiative affect provision in your authority?

16. How has special needs provision been affected?

17. What are your priorities for development of early years provision in your authority?

18. How would you like to see national policy develop for pre-school provision?

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TABLE 8 - LEAs responses to recent government initiatives on ECE provision

LEA	Expansion in Provision	Priorities and Targets	Training (all Standards Funds (SF) cited are matched by LEAs)	Involvement of qualified teachers
T	Not at this stage. A high level of provision has always been available. A shortfall in some areas requires strategic overview. Nursery classes are taking more rising 4s while more playgroups take 3-year-olds.	Quality provision and continuity in curriculum for 3-6-year-olds. Training. Family support. Integrate care and education. Review services for 3-year-olds. Standardisation of funding	£17,000 SF. Increase access to training and accreditation for Early Years workers in all settings, have existing specialist venue for training. Training for positive parenting provided for some.	Always had 4 full-time teachers across 10 day care settings (no plans to increase at this time) but it's not enough. Struggling in some settings to keep nursery teachers.
V	Opened 35 nursery classes since 1996, this has affected community playgroups – voluntary sector is marginalised while private sector is stable. In some areas not enough children to go round all the providers.	Development of 'wrap around care'. By mid-1999 to: Review current teacher involvement and English as an Additional Language in Early Years settings. Increase collaboration to raise quality. Impact of rural isolation on learners. SENs identification and provision. Review provision for 3-year-olds.	£80,000 SF. Cert. course developed. Admin post to co-ordinate training. All staff to be qualified to registration standards by 2001 including support staff in reception. Produced special guidance document for training. Consortium established 5 levels of training: basic to degree level	8 good local partnerships between schools and other providers – 40 more schools identified for development. Some surplus teacher time to be used for outreach work –as yet no real time to commit to this work.
W	No funds for expansion, a reconfiguration of services needed first. Playgroups suffered due to cut in social services budget in '95. Identified some areas with no provision e.g. a multi-ethnic part of city	Integrated provision to support children and families. Establish training strategy and appoint curriculum co-ordinator. Parent support. Review services for 3s. Involve a teacher in every setting. Increase Early Years Units with nursery ratics and curriculum.	Still at planning stage but £16,000 SF used to appoint curriculum and training co-ordinator and develop common training processes and procedures but retain specialisms. Specialist training in early years curriculum, SENs and family support.	'Not insisting teachers being in every setting (DfEE can't fund this)'. General advisers give support to private/voluntary sectors that have difficulty with standards with 4 year-olds. Conducting an audit of needs.
X	A decrease in provision due to early entry to school. Lost sessions in rural playgroups. Nursery schools and playgroups are taking children younger.	Training. All 4-year-olds in p/time education. Strengthen partnerships to provide more info. And support to parents, more wrap-around. Expand provision for 3s. Coordinate systems for inspection, registration and quality assurance.	£50,000 SF. One teacher per division with 5/6 part time field-workers delivering inter-agency training. Professional Development programme can cover basic stage through to PhD.	One teacher attached to each division. 31 part time 'early years qualified' fieldworkers to cover 350 voluntary/private settings. Approx 600 settings overall.
Y	No expansion, always a high provider. Now, more full-time places for four year olds, releasing more part-time places for 3-year-olds in nursery classes.	Quality provision: nursery principles and DesirableOutcomes, learning of four-year-olds. Review provision for 3s. Audit provision levels. Expand wrap-around. Develop parent support and increase partnerships.	£18,000 SF. Local authority training strategy in draft form but expected that staff development will support targets and inspection	Combined provisions have 2/3 teachers in each. Majority of courses offered to every sector, all have high teacher input. Appointed p/t advisory teacher to develop this.
Z	Not at all, plans to increase nursery provision were already in place and "playgroups are struggling to find a role"	P/T provision for all 3 year olds. Co-operation with other agencies to improve provision for 0-5. Promote Early Years curriculum training. More inclusive of children in need and those with disabilities. Standards for equal opportunities.	£70,000 SF. Have developed their own training package focussing on DOs, baseline assessment with ref. To SENs and equal opps. Hope to link with a Higher Ed. Institution for accreditation. Cost and time a problem. Looking to National Training Organisation for guidance on quality.	Put 1 teacher in social services settings but they did not want them. Now moving to one 'pedagogue' in each social service setting for 2-days/ wk for 4-year-olds – to be extended in future to all settings.

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The Effective Provision of Pre-School Education (EPPE) Project

Technical Paper 4

Parent, Family and Child Characteristics in Relation to Type of Pre-School and Socio-Economic Differences

A Longitudinal Study funded by the DfEE
1997-2003

Technical Paper 4

PARENT, FAMILY AND CHILD CHARACTERISTICS IN RELATION TO TYPE OF PRE-SCHOOL AND SOCIO-ECONOMIC DIFFERENCES

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Contents

Page Number

Overview of the Project 1 – 11

Executive Summary i – ii

Introduction 1

The Sample 1

Data collection and analysis 1

The Parents 2

- Labour market participation and socio-economic characteristics 2
- Comparing the EPPE sample with the UK population 3
- Types of pre-school and socio-economic status 5
- Level of parental employment 6
- Level of parental employment and use of childcare 8
- Marital status 11
- Parental age 12
- Educational qualifications of the parents 15
- Summary of parental characteristics 18

The Family 19

- Family composition 19
- Type of pre-school centre 19
- Ethnicity and language 20
- Summary of family characteristics 23

Child's previous health, development and behaviour 24

- Perinatal period 24
- Health, development and behaviour 25
- Physical health since birth 25
- Development problems since birth 26
- Behaviour problems since birth 27
- Total health, developmental and behavioural problems 28
- Recent health (last 6 months) 29
- Life events for child 30
- Summary of health, development and behaviour 31

Children's activities in the home 32

- Educational activities 32
- Television watching in the home 33
- Rules 34
- Summary of children's activities in the home 35

Pre-school provision and childcare history 36

- The target pre-school centre 36
- Age of starting target pre-school centre 37
- Reasons for attending the target centre 38
- Parental visits to the pre-school centre 39
- Childcare history 42
- Type of pre-school centre 42
- Total number of non-parental caregivers 45

Contents

Page Number

Summary 46

References 47

Table 1 Socio-economic characteristics of the EPPE sample 2
Table 1.2 Occupational classification of mother 3
Table 1.3 Educational qualifications of mother 3
Table 1.4 Educational qualifications of father 3
Table 1.5 Occupational classification of mother 4
Table 1.6 Comparison with all UK women 16 – 59 years old 5
Table 1.7 Socio-economic status and use of pre-school centres 5
Table 1.8 Maternal employment and type of pre-school centre 6
Table 1.9 Maternal employment and socio-economic status 7
Table 1.10 Paternal employment and type of pre-school centre 7
Table 1.11 Paternal employment and socio-economic status 8
Table 1.12 Correlations between parents' current hours of paid employment and previous childcare use 9
Table 1.13 Sessions in centre and level of mother's employment 10
Table 1.14 Correlations between parent's hours of paid employment and use of target pre-school centre 10
Table 1.15 Marital status and type of pre-school centre 11
Table 1.16 Marital status and socio-economic status of family 12
Table 1.17 Mother's age and type of pre-school centre 12
Table 1.18 Mother's age and socio-economic status of family 13
Table 1.19 Father's age and type of pre-school centre 13
Table 1.20 Father's age and socio-economic status of the family 14
Table 1.21 Educational qualifications of mother and type of pre-school centre 15
Table 1.22 Educational qualifications of mother and socio-economic status of family 16
Table 1.23 Educational qualifications of father and type of pre-school centre 17
Table 1.24 Father's qualifications and socio-economic status 18

Table 2.1 Type of pre-school centre and family type 19
Table 2.2 Socio-economic status and family type 20
Table 2.3 First language of child and type of pre-school centre 20
Table 2.4 First language of child and socio-economic status of family 21
Table 2.5 Ethnicity and type of pre-school centre 22
Table 2.6 Ethnicity and socio-economic status 23
Table 3.1 Perinatel period and type of pre-school centre 24
Table 3.2 Perinatel period and socio-economic status of the family 25
Table 3.3 Previous health problems and type of pre-school centre 25
Table 3.4 Previous health problems and socio-economic status 26
Table 3.5 Previous development problems and type of pre-school centre 26
Table 3.6 Previous development problems and socio-economic status 27
Table 3.7 Behaviour problems and type of pre-school centre 27
Table 3.8 Behaviour problems and socio-economic status of the family 28
Table 3.9 Overall previous problems and type of pre-school centre 28
Table 3.10 Overall previous problems and socio-economic status of the family 29
Table 3.11 Health index for last 6 months by type of pre-school centre 29
Table 3.12 Health index for last 6 months by socio-economic group 30

Contents

Page Number

Table 3.13 Number of disruptive life events and type of pre-school centre 30
Table 3.14 Number of disruptive life events and socio-economic status of family 31

Table 4.1 Educational environment and type of pre-school centre 32
Table 4.2 Educational environment and socio-economic status 32
Table 4.3 Amount of TV and type of pre-school centre 33
Table 4.4 Amount of TV and socio-economic status of family 33
Table 4.5 Rules for TV or video and type of pre-school centre 34
Table 4.6 Rules for TV or video and socio-economic status 34
Table 4.7 Rules relating to bedtime and type of pre-school centre 35
Table 4.8 Rules relating to bedtime and socio-economic status of the family 35

Table 5.1 Sessions attended and type of pre-school centre 36
Table 5.2 Sessions attended and socio-economic status 37
Table 5.3 Age of starting centre and type of pre-school centre 37
Table 5.4 Age of starting centre and socio-economic status 38
Table 5.5 Reasons for choice of centre varied by type of pre-school centre 38
Table 5.6 Reasons for choice of centre varied by socio-economic status of family 39
Table 5.7 Parental visits to centre varied with type of pre-school centre 40
Table 5.8 Parental visits to centre varied with socio-economic status 40
Table 5.9 Reasons for visiting the centre in relation to type of pre-school centre 41
Table 5.10 Reasons for visiting the centre in relation to socio-economic status of family 41
Table 5.11 Pre-target childcare (no. of hours in child's life) and type of pre-school centre 43
Table 5.12 Pre-target childcare (no. of hours) and socio-economic status 44
Table 5.13 Total of non-parental caregivers and type of pre-school centre 45
Table 5.14 Total of non-parental caregivers and socio-economic status 45

Effective Provision of Pre-school Education

"EPPE"

Overview of the Project

This series of 12 reports describes the research on effective pre-school provision funded by the UK Department for Education & Employment (DfEE). Further details appear in Technical Paper 1 (Sylva, Sammons, Melhuish, Siraj-Blatchford & Taggart 1999). This longitudinal study assesses the attainment and development of children followed longitudinally between the ages of 3 and 7 years. Three thousand children were recruited to the study over the period January 1997 to April 1999 from 141 pre-school centres. Initially 114 centres from four types of provision were selected for the study but in September 1998 an extension to the main study was implemented to include innovative forms of provision, including 'combined education and care' (Siraj-Blatchford et al. 1997).

Both qualitative and quantitative methods (including multilevel modelling) have been used to explore the effects of individual pre-school centres on children's attainment and social/behavioural development at entry to school and any continuing effects on such outcomes at the end of Key Stage 1 (age 7). In addition to centre effects, the study investigates the contribution to children's development of individual and family characteristics such as gender, ethnicity, language, parental education and employment. This overview describes the research design and discusses a variety of research issues (methodological and practical) in investigating the impact of pre-school provision on children's developmental progress. A parallel study is being carried out in Northern Ireland.

There have been many initiatives intended to improve educational outcomes for young children. Will these initiatives work? Will they enable children to enter school 'more ready' to learn, or achieve more at the end of Key Stage 1? Which are the most effective ways to educate young children? The research project described in this paper is part of the new emphasis on ensuring 'a good start' for children.

PREVIOUS RESEARCH ON THE EFFECTS OF EARLY EDUCATION IN THE UK

There has been little large-scale, systematic research on the effects of early childhood education in the UK. The 'Start Right' Enquiry (Ball 1994; Sylva 1994) reviewed the evidence of British research and concluded that small-scale studies suggested a positive impact but that large-scale research was inconclusive. The Start Right enquiry recommended more rigorous longitudinal studies with baseline measures so that the 'value added' to children's development by pre-school education could be established.

Research evidence elsewhere on the effects of different kinds of pre-school environment on children's development (Melhuish et al. 1990; Melhuish 1993; Sylva & Wiltshire 1993; Schweinhart & Weikart 1997; Borge & Melhuish, 1995; National Institute of Child Health Development 1997) suggests positive outcomes. Some researchers have examined the impact of particular characteristics, e.g. gender and attendance on children's adjustment to nursery classes (Davies & Brember 1992), or adopted cross-sectional designs to explore the impact of different types of pre-school provision (Davies & Brember 1997). Feinstein, Robertson & Symons (1998) attempted to evaluate the effects of pre-schooling on children's subsequent progress but birth cohort designs may not be appropriate for the study of the influence of pre-school education. The absence of data about children's attainments at entry to pre-school means that neither the British Cohort Study (1970) nor the National Child Development Study (1958) can be used to explore the effects of pre-school education on children's progress. These studies are also limited by the time lapse and many changes in the nature of pre-school provision which have

occurred. To date no research using multilevel models (Goldstein 1987) has been used to investigate the impact of both type of provision **and** individual centre effects. Thus little research in the UK has explored whether some forms of provision have greater benefits than others. Schagen (1994) attempted multilevel modelling but did not have adequate control at entry to pre-school.

In the UK there is a long tradition of variation in pre-school provision both between types (e.g. playgroup, local authority or private nursery or nursery classes) and in different parts of the country reflecting Local Authority funding and geographical conditions (i.e. urban/rural and local access to centres). A series of reports (House of Commons Select Committee 1989; DES Rumbold Report 1990; Ball 1994) have questioned whether Britain's pre-school education is as effective as it might be and have urged better co-ordination of services and research into the impact of different forms of provision (Siraj-Blatchford 1995). The EPPE project is thus the first large-scale British study on the effects of different kinds of pre-school provision and the impact of attendance at individual centres.

OVERVIEW OF RESEARCH METHODS

The EPPE project is a major study instituted in 1996 to investigate three issues which have important implications for policy and practice:

- the effects on children of different types of pre-school provision,
- the 'structural' (e.g. adult-child ratios) and 'process' characteristics (e.g. interaction styles) of more effective pre-school centres, and
- the interaction between child and family characteristics and the kind of pre-school provision a child experiences.

An educational effectiveness research design was chosen to investigate these topics because this enabled the research team to investigate the progress and development of individual children (including the impact of personal, socio-economic and family characteristics), and the effect of individual pre-school centres on children's outcomes at both entry to school (the start of Reception which children can enter between the ages of 4 and 5 plus) and at the end of Key Stage 1 (age 7 plus). Such research designs are well suited to social and educational research with an institutional focus (Paterson & Goldstein 1991). The growing field of school effectiveness research has developed an appropriate methodology for the separation of intake and school influences on children's progress using so called 'value added' multilevel models (Goldstein 1987, 1995). As yet, however, such techniques have not been applied to the pre-school sector, although recent examples of value added research for younger ages at the primary level have been provided by Tymms et al. 1997; Sammons & Smees 1998; Jesson et al. 1997; Strand 1997; and Yang & Goldstein 1997. These have examined the relationship between baseline assessment at reception to infant school through to Key Stage 1 (age 7 plus years).

School effectiveness research during the 1970s and 1980s addressed the question "*Does the particular school attended by a child make a difference?*" (Mortimore et al. 1988; Tizard et al. 1988). More recently the question of internal variations in effectiveness, teacher/class level variations and stability in effects of particular schools over time have assumed importance (e.g. Luyten 1994; 1995; Hill & Rowe 1996; Sammons 1996). This is the first research to examine the impact of individual pre-school centres using multilevel approaches. The EPPE project is designed to examine both the impact of type of pre-school provision as well as allow the identification of particular pre-school characteristics which have longer term effects. It is also designed to establish whether there are differences in the effects of individual pre-school centres on children's progress and development. In addition, the project explores the impact of pre-school provision for different groups of children and the extent to which pre-schools are effective in promoting different kinds of outcomes (cognitive and social/behavioural).

166

The 8 aims of the EPPE Project

- To produce a detailed description of the 'career paths' of a large sample of children and their families between entry into pre-school education and completion (or near completion) of Key Stage 1.
- To compare and contrast the developmental progress of 3,000+ children from a wide range of social and cultural backgrounds who have differing pre-school experiences including early entry to Reception from home.
- To separate out the effects of pre-school experience from the effects of education in the period between Reception and Year 2.
- To establish whether some pre-school centres are more effective than others in promoting children's cognitive and social/emotional development during the pre-school years (ages 3-5) and across Key Stage 1 (5-7 years).
- To discover the individual characteristics (structural and process) of pre-school education in those centres found to be most effective.
- To investigate differences in the progress of different groups of children, e.g. second language learners of English, children from disadvantaged backgrounds and both genders.
- To investigate the medium-term effects of pre-school education on educational performance at Key Stage 1 in a way which will allow the possibility of longitudinal follow-up at later ages to establish long-term effects, if any.
- To relate the use of pre-school provision to parental labour market participation.

The sample: regions, centres and children

In order to maximise the likelihood of identifying the effects of individual centres and also the effects of various types of provision, the EPPE sample was stratified by type of centre and geographical location.

- Six English Local Authorities (LAs) in five regions were chosen strategically to participate in the research. These were selected to cover provision in urban, suburban and rural areas and a range of ethnic diversity and social disadvantage. (Another related project covering Northern Ireland was instituted in April 1998 [Melhuish et al. 1997]. This will enable comparison of findings across different geographical contexts.)
- Six main types of provision are included in the study (the most common forms of current provision; *playgroups*, local authority or voluntary *day nurseries*, *private day nurseries*, *nursery schools*, *nursery classes*, and centres *combining care and education*. Centres were selected randomly within each type of provision in each authority.

In order to enable comparison of centre and type of provision effects the project was designed to recruit 500 children, 20 in each of 20-25 centres, from the six types of provision, thus giving a total sample of approximately 3000 children and 140 centres[1]. In some LAs certain forms of provision are less common and others more typical. Within each LA, centres of each type were selected by stratified random sampling and, due to the small size of some centres in the project (e.g. rural playgroups), more of these centres were recruited than originally proposed, bringing the sample total to 141 centres and over 3000 children.

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[1] The nursery school and combined centre samples were added in 1998 and their cohorts will be assessed somewhat later; results will be reported separately and in combined form.

Children and their families were selected randomly in each centre to participate in the EPPE Project. All parents gave written permission for their children to participate.

In order to examine the impact of no pre-school provision, it was proposed to recruit an additional sample of 500 children pre-school experience from the reception classes which EPPE children entered. However in the five regions selected a sample of only 200+ children was available for this 'home' category.

The progress and development of pre-school children in the EPPE sample is being followed over four years until the end of Key Stage 1. Details about length of sessions, number of sessions normally attended per week and child attendance have been collected to enable the amount of pre-school education experienced to be quantified for each child in the sample. Two complicating factors are that a substantial proportion of children have moved from one form of pre-school provision to another (e.g. from playgroup to nursery class) and some will attend more than one centre in a week. Careful records are necessary in order to examine issues of stability and continuity, and to document the range of pre-school experiences to which individual children can be exposed.

Child assessments

Around the third birthday, or up to a year later if the child entered pre-school provision after three, each child was assessed by a researcher on four cognitive tasks: verbal comprehension, naming vocabulary, knowledge of similarities seen in pictures, and block building. A profile of the child's social and emotional adjustment was completed by the pre-school educator who knew the child best. If the child changed pre-school before school entry, he or she was assessed again. At school entry, a similar cognitive battery was administered along with knowledge of the alphabet and rhyme/alliteration. The Reception teacher completed the social emotional profile.

Further assessments were made at exit from Reception and at the end of Years 1 and 2. In addition to standardised tests of reading and mathematics, information on National Assessments will be collected along with attendance and special needs. At age 7, children will also be invited to report themselves on their attitudes to school.

Measuring child/family characteristics known to have an impact on children's development

1) Information on individual 'child factors' such as gender, language, health and birth order was collected at parent interview.

2) Family factors were investigated also. Parent interviews provided detailed information about parent education, occupation and employment history, family structure and attendance history. In addition, details about the child's day care history, parental attitudes and involvement in educational activities (e.g. reading to child, teaching nursery rhymes, television viewing etc) have been collected and analysed.

Pre-school Characteristics and Processes

Regional researchers liaised in each authority with a Regional Coordinator, a senior local authority officer with responsibility for Early Years who arranged 'introductions' to centres and key staff. Regional researchers interviewed centre managers on: group size, child staff ratio, staff training, aims, policies, curriculum, parental involvement, etc.

'Process' characteristics such as the day-to-day functioning within settings (e.g. child-staff interaction, child-child interaction, and structuring of children's activities) were also studied. The Early Childhood Environment Rating Scale (ECERS) which has been recently adapted (Harms, Clifford & Cryer 1998) and the Caregiver Interaction Scale (Arnett 1989) were also administered. The ECERS includes the following sub-scales:

- Space and furnishings
- Personal care routines
- Language reasoning
- Activities
- Interaction
- Programme structure
- Parents and staffing

In order that the more educational aspects of English centres could be assessed, Sylva,Siraj-Blatchford, Taggart & Colman (unpublished) developed four additional ECERS sub-scales describing educational provision in terms of: Language, Mathematics, Science and the Environment, and Diversity.

Setting the centres in context

In addition to describing how each centre operated internally, qualitative interviews were conducted with centre managers to find out the links of each setting to local authority policy and training initiatives. Senior local authority officers from both Education and Social Services were also interviewed to find out how each local authority implemented Government early years policy, especially the Early Years Development Plans which were established to promote education and care partnerships across providers in each local authority.

Case Studies

In addition to the range of quantitative data collected about children, their families and their pre-school centres, detailed qualitative data will be collected using case studies of several "effective" pre-school centres (chosen retrospectively as 'more effective' on the basis of the multilevel analyses of intake and outcome measures covering the period baseline to entry into reception). This will add the fine-grained detail to how processes within centres articulate, establish and maintain good practice.

The methodology of the EPPE project is thus mixed. These detailed case studies will use a variety of methods of data gathering, including documentary analysis, interviews and observations and the results will help to illuminate the characteristics of more successful pre-school centres and assist in the generation of guidance on good practice. Particular attention will be paid to parent involvement, teaching and learning processes, child-adult interaction and social factors in learning. Inevitably there are difficulties associated with the retrospective study of process characteristics of centres identified as more or less effective after children in the EPPE sample have transferred to school and it will be important to examine field notes and pre-school centre histories to establish the extent of change during the study period.

ANALYTIC STRATEGY

The EPPE research was designed to enable the linking of three sets of data: information about children's attainment and development (at different points in time), information about children's personal, social and family characteristics (e.g. age, gender, SES etc), and information about pre-school experience (type of centre and its characteristics).

169

Identifying individual centre effects and type of provision at entry to school

Longitudinal research is essential to enable the impact of child characteristics (personal, social and family) to be disentangled from any influence related to the particular pre-school centre attended. Multilevel models investigate the clustered nature of the child sample, children being nested within centres and centres within regions. The first phase of the analysis adopts these three levels inmodels which attempt to identify any centre effects at entry to reception class.

Given the disparate nature of children's pre-school experience it is vital to ensure that the influences of age at assessment, amount and length of pre-school experience and pre-school attendance record are accounted for when estimating the effects of pre-school education. This information is also important in its own right to provide a detailed description of the range of pre-school provision experienced by different children and any differences in the patterns of provision used by specific groups of children/parents and their relationship to parents' labour market participation. Predictor variables for attainment at entry to reception will include prior attainment (verbal and non-verbal sub scales), social/emotional profiles, and child characteristics (personal, social and family). The EPPE multilevel analyses will seek to incorporate adjustment for measurement error and to examine differences in the performance of different groups of children at entry to pre-school and again at entry to reception classes. The extent to which any differences increase/decrease over this period will be explored, enabling equity issues to be addressed.

After controlling for intake differences, the estimated impact of individual pre-schoolcentres will be used to select approximately 12 'outlier' centres from the 141 in the project for detailed case studies (see 'Case Studies' above). In addition, multilevel models will be used to test out the relationship between particular process quality characteristics of centres and children's cognitive and social/behavioural outcomes at the end of the pre-school period (entry to school). The extent to which it is possible to explain (statistically) the variation in children's scores on the various measures assessed at entry to reception classes will provide evidence about whether particular forms of provision have greater benefits in promoting such outcomes by the end of the pre-school period. Multilevel analyses will test out the impact of measures of pre-school process characteristics, such as the scores on various ECERS scales and Pre-School Centre structural characteristics such as ratios. This will provide evidence as to which measures are associated with better cognitive and social/behavioural outcomes in children.

Identifying continuing effects of pre-school centres at KS1

Cross-classified multilevel models have been used to examine the long term effects of primary schools on later secondary performance (Goldstein & Sammons, 1997). In the EPPE research it is planned to use such models to explore the possible mid-term effects of pre-school provision on later progress and attainment at primary school at age 7. The use of cross classified methods explicitly acknowledges that children's educational experiences are complex and that over time different institutions may influence cognitive and social/behavioural development for better or worse. This will allow the relative strength of any continuing effects of individual pre-school centre attendance to be ascertained, in comparison with the primary school influence.

THE LINKED STUDY IN NORTHERN IRELAND 1998-2003

The Effective Pre-school Provision in Northern Ireland (EPPNI) is part of EPPE and is under the directorship of Professor Edward Melhuish, Professor Kathy Sylva, Dr. Pam Sammons, and Dr. Iram Siraj-Blatchford. The study explores the characteristics of different kinds of early years provision and examines children's development in pre-school, and influences on their later adjustment and progress at primary school up to age 7 years. It will help to identify the aspects of pre-school provision which have a positive impact on children's attainment, progress, and development, and so provide guidance on good practice. The research involves 70 pre-school centres randomly selected throughout Northern Ireland.

The study investigates all main types of pre-school provision attended by 3 to 4 year olds in Northern Ireland: playgroups, day nurseries, nursery classes, nursery schools and reception groups and classes. The data from England and Northern Ireland offer opportunities for potentially useful comparisons.

SUMMARY

This "educational effectiveness" design of the EPPE research study enables modelling of the complicated effects of amount and type of pre-school provision (including attendance) experienced by children and their personal, social and family characteristics on subsequent progress and development. Assessment of both cognitive and social/behavioural outcomes has been made. The use of multilevel models for the analysis enables the impact of both type of provision and individual centres on children's pre-school outcomes (at age 5 and later at age 7) to be investigated. Moreover, the relationships between pre-school characteristics and children's development can be explored. The results of these analyses and the findings from the qualitative case studies of selected centres can inform both policy and practice. A series of 12 technical working papers will summarise the findings of the research.

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Technical Paper 4
Parent, family and child characteristics in relation to type of pre-school and socio-economic differences

EXECUTIVE SUMMARY

Information on the characteristics of the parents, families, and children in the Effective Provision of Pre-school education (EPPE) project was collected by parental interview at the start of the study. This information was used to describe the sample in terms of the parents (labour market participation, socio-economic characteristics, qualifications, marital status and age), the family (composition, ethnicity and language), the child's health, development and behaviour, the child's activities in the home, the use of pre-school provision and childcare history.

The sample's socio-economic characteristics were compared to those of a recent national sample of parents of similar age children and the EPPE sample was found to be somewhat over-represented at the lower end of the socio-economic spectrum. This was anticipated because the project sampled from Local Authorities which were chosen to maintain a reasonable representation of social disadvantage and ethnic deversity.

The sample described in this paper was recruited from four types of pre-school centre; nursery class, playgroup, private day nursery and Local Authority (LA) centre. This paper considers how the variation of the sample's characteristics is related to the different types of pre-school centre and also to socio-economic status. Consideration was given to whether type of pre-school centre differences reflect socio-economic status or whether the differences between the users of different types of pre-school centre go beyond differences in socio-economic status.

Parental characteristics of level of employment, marital status, parental age and qualifications all varied with socio-economic classification and the variation by type of pre-school centre reflected this variation. In addition to variation linked to socio-economic status, maternal levels of paid employment were also linked to type of pre-school centre and amount of previous childcare used. Both maternal employment and previous childcare use were highest for the private day nurseries and LA centres. Family composition, ethnicity and language use within the sample were described and again these varied by socio-economic classification and this was reflected in the distribution by type of pre-school centre.

When the child's health, development and behaviour was considered, to a large extent, a similar pattern emerged of type of pre-school differences following the pattern of socio-economic differences. However, for the child's health, development and behaviour an exception to this pattern was the lower level of problems reported for the nursery class group which would not have been expected from their socio-economic status. Recent health and potentially disruptive life events for children appeared to be related neither to social class nor type of pre-school centre.

Children's activities in the home were considered in terms of educational activities, TV and video watching, and rules concerning TV and bedtime. Educational activities revealed a clear socio-economic trend with differences related to type of pre-school

reflecting these socio-economic differences in the pre-school groups. Rules regarding TV and bedtime, however, did not entirely follow this pattern.

Parents use of and involvement with pre-school centres, demonstrated relationships with socio-economic differences. For example, parents from higher socio-economic groups were more likely to visit centres and more likely to be attending meetings with staff and to be involved in policy discussions. Parents from higher socio-economic groups were also more likely to be concerned with the atmosphere and educational activities in their choice of pre-school centre. However, there were a number of differences which were related to type of pre-school centre rather than deriving from parental socio-economic differences. These included:

- the age of starting which was lower for both private day nurseries and LA centres.
- the number of sessions attended which showed a different pattern for each type of pre-school centre.
- the relationship between maternal level of paid employment was linked to use of the target pre-school centre for private day nurseries and LA centres but not for nursery classes or playgroups.
- also visits to centres were more likely in playgroups than other types of centre and for playgroups, visits by parents included spending time with children and fundraising activities more often than for the other types of pre-school centre.

The childcare histories of the children revealed enormous diversity across the whole sample and for children within each type of pre-school centre. Overall the children using private day nurseries and LA centres had more than twice as much non-parental care as the children in the nursery classes and playgroups. This difference was largely accounted for by the time spent at their current pre-school centre where they had started earlier and were attending for more sessions and hours per week. There was also a strong association between level of maternal paid employment and previous childcare use. Those mothers who were employed for longer hours had a history of using greater amounts of childcare. The socio-economic differences in childcare histories largely reflect the differential use of types of pre-school centre and differential levels of maternal paid employment by the different socio-economic groups. For further details concerning the relationship between children's personal and family characteristics and their cognitive attainment at entry to the EPPE study see Technical Paper 2, Characteristics of the EPPE Project : sample at entry to the study. (Sammons et al, 1999).

The EPPE researchers will be studying the developmental progress of the children until age seven. This range of differences within the sample will need to be considered in explaining children's progress through pre-school and into primary school. Some of these factors may be related to developmental outcomes and later stages of the study can investigate this possibility and where necessary allow for such factors in evaluating the contribution of pre-school to developmental progress.

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INTRODUCTION

The Effective Provision of Pre-School Education (EPPE) project is a research study of children's progress and development from age three to seven years, and how progress relates to their pre-school centre experience and family background. An overview of the study including the aims is contained in Overview of the Project at the beginning of this technical paper. Further details are provided in the first technical paper of this series. *The Effective Provision of Pre-School Education (EPPE) Project : Technical paper One (Sylva et al., 1999)* .

In the first stage of the study parents were interviewed concerning child and family characteristics. A central focus of this project is the development and progress of the children in the study. Children's development may be influenced by the pre-school environment and it will certainly be influenced by family background. Hence any study which has the aim of investigating the possible effects of pre-school experience must firstly consider the variation in family background of children who use different types of pre-school provision. Hence this paper describes the socio-economic characteristics of the sample included in the first stage of the project, and relates the sample in terms of these characteristics to nationally representative data. Subsequently variations in parental, family and child characteristics between the groups of parents and children using different types of pre-school centre are examined. Consideration is given to the extent to which differences can be understood in terms of the socio-economic variation between users of different types of pre-school, and to what extent the variation reflects other differences linked to the type of pre-school centre used.

This information will be used to inform the later analyses and interpretation of results which will occur later in the project and which will be the subject of later Technical Papers in this series. However understanding the variation in parental, family and child characteristics amongst users of different types of pre-school centres may well be useful in the planning of future provision.

THE SAMPLE

The focus of the EPPE study is on the effectiveness of pre-school centres. The EPPE sample was stratified by type of centre and geographical location, as described in the overview.

The first stage of the study involved 2146 children recruited from 114 pre-school centres, including 588 children from nursery classes, 609 children from playgroups, 516 children from private day nurseries and 433 children from Local Authority centres. The children were aged between 3 years and 4 years 3 months (mean 40.4 months;s.d. =4.3 months) at the beginning of the study. For 26 families, parents were unavailable for interview. Hence this paper is based on the analysis of data from 2120 parental interviews.

DATA COLLECTION AND ANALYSIS

The first stage of the EPPE project involved the collection of baseline data on the development of the children, and also information from the parents concerning the family, parents and children. The baseline developmental data on the children is reported in a separate paper in the series, Technical paper 2: Characteristics of the Effective Provision of Pre-school Education (EPPE) Project Sample at Entry to the Study (Sammons et al.,1999). This report is concerned with the data deriving from the parental interview conducted shortly after the children were recruited to the study.

Parents were interviewed either in person when they were at the pre-school centre, or by telephone. The interview followed a semi-structured format with answers to most questions being coded into an established set of categories, and a small number of open-ended questions that were coded post-hoc. The length of the interviews varied, depending on the complexity of the information to be collected, the conciseness of the parents and other factors. A typical interview might take between fifteen and forty minutes of the parent's time depending upon the complexity of the information supplied by the parent. The interview contained questions dealing with the parents, the family, the child's health, development and behaviour, the child's activities in the home, the use of pre-school provision and the childcare history. These topics are considered in terms of the type of pre-school centre used i.e. nursery class, playgroup, private day nursery or Local Authority (LA) centre, and also in terms of the socio-economic status of the family

THE PARENTS

Labour market participation and socio-economic characteristics

The parental interview collected information on the employment of the parents. The occupations of the parents were classified according to the OPCS (1995) occupational classification. Hence the paternal and maternal occupational classifications are available as a basis for a classification of socio-economic status. The socio-economic characteristics of the sample based upon father's and mother's current or last job is shown in table 1.1. While in much research the father's occupational status is used for the classification of the socio-economic status of the family, in this study there are many fathers (501, 23% of the sample) for whom data are unavailable, often these are absent fathers. An alternative is to use the occupational classification of the mother, but many mothers live in households with the father as sole breadwinner. A way of overcoming these problems is to assign to the familya socio-economic classification based upon the occupation of the parent with the highest occupational status. This strategy has been adopted here based upon employment at the start of the study. The sample's socio-economic characteristics formulated according to his method are shown in the last column of table 1.1.

TABLE 1.1: SOCIO-ECONOMIC CHARACTERISTICS OF THE EPPE SAMPLE

Socio-economic classification	*Based on father's occupation*		*Based on mother's occupation*		*Based on parents' occupations*	
	N	%	N	%	N	%
Professional (I)	173	*10.5*	108	*5.2*	197	*9.3*
Intermediate (II)	430	*26.1*	435	*20.8*	537	*25.4*
Skilled (III NM) non-manual	270	*16.4*	811	*38.7*	576	*27.3*
Skilled (III M) Manual	451	*27.4*	108	*5.2*	162	*7.7*
Semi-skilled (IV)	263	*16.0*	431	*20.6*	163	*7.6*
Unskilled (V)	37	*2.2*	81	*3.9*	16	*0.8*
Unemployed /student	21	*1.3*	119	*5.6*	462	*21.9*
Total	**1645**	***100***	**2093**	***100***	**2113**	***100***
Missing data	501		53		33	
TOTAL	**2146**					

Note that the unemployed/student category includes families where neither parent was in employment at the start of the study and includes some cases where a parent was a student. This category does not take into account where the parents were claiming unemployment benefit. In subsequent discussion analysis will be based on a sample of 2120 due to 26 parents being unavailable for interview.

Comparing the EPPE sample with the UK population

While the EPPE sample was not designed to be wholly representative of the population of the UK, it is useful to know the relationship between the sample and the wider population. Recently, a nationally representative sample of parents with a pre-school child has been surveyed for the DfEE (Prior et al., unpublished). Using this survey as the basis for statistics on a national sample, it is possible to compare the EPPE sample with a national sample of parents of 3-4 year old children. Table 1.2 shows such a comparison for maternal occupational status, where mothers have been employed. Occupation is either current occupation or last occupation if currently unemployed.

TABLE 1.2: OCCUPATIONAL CLASSIFICATION OF MOTHER

Occupational classification		EPPE Sample %	National Sample %
Professional/ Intermediate	I&II	27.5	26.9
Skilled non-manual	IIInm	41.1	46.3
Skilled manual	IIIm	5.5	20.9
Semi-skilled and Unskilled	IV&V	25.9	5.9

It is possible to construct similar comparisons for mother's and father's educational qualifications as shown in table 1.3 and 1.4.

TABLE 1.3: EDUCATIONAL QUALIFICATIONS OF MOTHER

Qualification	EPPE Sample %	National Sample %
Degree or higher	19.1	12.9
HND, 18+ vocational	13.0	12.1
A level	8.8	12.7
O level	38.2	44.1
Less than O level	19.8	16.2
Other miscellaneous	1.1	1.9

TABLE 1.4: EDUCATIONAL QUALIFICATIONS OF FATHER

Qualification	EPPE Sample %	National Sample %
Degree or higher	25.2	23.9
HND, 18+ vocational	13.0	17.2
A level	10.1	16.6
O level	30.5	28.6
Less than O level	20.1	12.7
Other miscellaneous	1.1	1.0

On the basis of maternal occupation, the EPPE sample is over-represented (as compared with a national sample) at the bottom end of the socio-economic spectrum. A similar pattern emerges from the comparisons based on father's qualifications. The EPPE sample does not appear to be as over-represented at the bottom end of the educational qualification spectrum when the comparison is based on mother's qualifications. Mother's qualifications indicate a slight over-representation at the top end and bottom end of the spectrum. However, the comparison based on father's qualifications clearly shows a very similar pattern to maternal occupational status with a larger over-representation at the bottom end of the socio-economic spectrum. Specifically there is an under-representation of the skilled non-manual occupations and an over-representation of the semi-skilled and unskilled occupations.

The national sample is drawn from all parents of 3-4 year old children, regardless of whether their child attends a pre-school centre. The EPPE sample is specifically drawn from users of four types of pre-school centre; nursery classes, playgroups, private day nurseries and LA centres. The classification by mother's occupational status, where mothers have been employed, for these centres is compared with the National Sample in table 1.5.

TABLE 1.5: OCCUPATIONAL CLASSIFICATION OF MOTHER

Occupational classification	*Type of pre-school centre*				*National Sample* (Prior et al.)
	Nursery Class	Playgroup	Private DN	LA centre	
	%	%	%	%	%
Professional/ Intermediate I&II	*19.9*	*16.9*	*51.1*	*23.2*	***26.9***
Skilled non manual IIInm	*38.4*	*49.6*	*35.8*	*39.1*	***46.3***
Skilled manual IIIm	*6.0*	*5.5*	*4.4*	*6.1*	***20.9***
Semi-skilled/ Unskilled IV&V	*35.8*	*27.9*	*8.7*	*31.7*	***5.9***

It is clear that mothers who use private day nurseries are frequently of higher occupational status. Mothers from the other three groups (nursery class, playgroups and LA centres) are more likely to have been in the semi-skilled or unskilled occupationsthan the mothers in the national sample. On the basis of comparisons with the national sample reported by Prioret al. (unpublished), for all pre-school groups, mothers who have been in the skilled manual occupations are under-represented and women who have been in semi-skilled and unskilled occupations are over-represented. The consequence of these variations is that the EPPE sample is over-represented at the lower end of the socio-economic spectrum. This would appear to be a direct result of the strategic sampling of Local Authorities. For two of these types, nursery classes and LA centres it is often the local authority's policy to target such provision in areas of socio-economic disadvantage. Hence over-representation at the bottom end of the socio-economic spectrum is not unexpected.

However, the mothers in the EPPE sample can also be compared with all UK women (Office of National Statistics, 1999). Table 1.6 shows this comparison.

TABLE 1.6: COMPARISON WITH ALL UK WOMEN 16-59 YEARS OLD

Occupational classification		**EPPE mothers who have been employed** **%**	**UK women 16-59 in recent employment** %
Professional/ Intermediate	I&II	27.5	31.0
Skilled non-manual	IIInm	41.1	35.7
Skilled manual	IIIm	5.5	8.3
Semi-skilled and Unskilled	IV&V	25.9	25.0

On the basis of this comparison the EPPE sample does not vary markedly from the national distribution of occupational status for women overall.

Type of pre-school centre and socio-economic status

A more detailed breakdown of how the type of pre-school centre attended varies according to the socio-economic status classification of the family is shown in table 1.7.

TABLE 1.7: SOCIO-ECONOMIC STATUS AND USE OF PRE-SCHOOL CENTRES

Socio-economic status	***Type of pre-school centre***								***Total***	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
Professional	38	*6.5*	23	*3.8*	121	*23.4*	15	*3.5*	197	*9.2*
Intermediate	115	*19.6*	125	*20.5*	214	*41.5*	83	*19.2*	537	*25.0*
Skilled non manual	159	*27.0*	202	*33.2*	118	*22.9*	97	*22.4*	576	*26.8*
Skilled manual	60	*10.2*	64	*10.5*	19	*3.7*	19	*4.4*	162	*7.5*
Semi-skilled	64	*10.9*	53	*8.7*	12	*2.3*	34	*7.9*	163	*7.6*
Unskilled	4	*0.7*	4	*0.7*	0	*0*	8	*1.8*	16	*0.7*
Unemployed/student	138	*23.5*	133	*21.8*	27	*5.2*	163	*37.6*	461	*21.5*
Data unavailable	10	*1.7*	5	*0.8*	5	*1.0*	14	*3.2*	34	*1.6*
Total	588	*100*	609	*100*	516	*100*	433	*100*	2146	*100*

The pre-school groups have significantly different socio-economic profiles (χ^2 = 438.9,df = 21, p< .0001). It is clear from the above table that the families using private day nurseries have a distinctly higher socio-economic profile than the rest of the sample. While the proportion of families using a nursery class, playgroup and LA centre in the professional and intermediate classifications is around 24-26%, for the families using a private day nursery the proportion is 64.9%, i.e. about 2 ½ times as great. Amongst the families in the remaining socio-economic classifications, those using LA centres are the most likely to be unemployed, with 37.6%. The families using a nursery class or playgroup are very similar in their socio-economic characteristics, with a slightly higher number of professional families using a nursery class than a playgroup, but these two groups are close to the overall socio-economic pattern for the sample.

Thus the socio-economic ordering is that the highest are the users of the private day nursery group, the nursery class and playgroup users are next and very similar to each other, and then the families using LA centres have the lowest socio-economic profile.

The consequences of these socio-economic differences between the families using different types of pre-school are that many differences associated with type of pre-school will actually derive from socio-economic differences. In particular where differences in a characteristic mirror the differences revealed in table 1.7 then this strongly indicates that the cause of the difference may be socio-economic.

Level of parental employment

Information from questions concerning the hours of employment for the mother and father were used to consider the issue of level of employment for parents. Firstly mothers' paid employment was considered.

TABLE 1.8: MATERNAL EMPLOYMENT AND TYPE OF PRE-SCHOOL CENTRE.

Mother Full/part employment	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
Unemployed	321	*55.5*	350	*53.2*	140	*27.6*	215	*51.9*	**996**	***47.4***
1-8 hours	32	*5.5*	32	*5.3*	19	*3.7*	6	*1.4*	**89**	***4.2***
9-19 hours	78	*13.5*	92	*15.3*	84	*16.5*	43	*10.4*	**297**	***14.1***
20-29 hours	55	*9.5*	79	*13.1*	92	*18.1*	40	*9.7*	**266**	***12.7***
Full-time	92	*15.9*	78	*13.0*	173	*34.1*	110	*26.6*	**453**	***21.6***
Total	**578**	***100***	**601**	***100***	**508**	***100***	**414**	***100***	**2101**	***100***

The overall differences in pre-school groups are significant ($\chi^2 = 734.9$,df = 28, p< .001). The mothers in the private day nursery group show the highest levels of paid employment, followed by the mothers in the LA centre group. The nursery class and playgroup mothers show similar levels of paid employment. The LA centre mothers are as likely to be unemployed as the nursery class and playgroup mothers, but if employed are more likely to be employed full-time. The private day nursery mothers show the least unemployment and the highest levels of employment when employed.

TABLE 1.9: MATERNAL EMPLOYMENT AND SOCIO-ECONOMIC STATUS.

Mother Full/part employment	Socio-economic status of family										Total	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
Unemployed	218	*29.9*	192	*33.4*	71	*44.9*	60	*33.9*	456	*100*	**997**	***47.6***
1-8 hours	34	*4.7*	25	*4.3*	11	*7.0*	18	*10.2*	0	*0*	**88**	***4.2***
9-19 hours	110	*15.1*	121	*21.0*	28	*17.7*	37	*20.9*	0	*0*	**296**	***14.1***
20-29hours	110	*15.1*	103	*17.9*	20	*12.7*	32	*18.1*	0	*0*	**265**	***12.6***
Full-time	258	*35.3*	134	*23.3*	28	*17.7*	30	*16.9*	0	*0*	**450**	***21.5***
Total	**730**	**100**	**575**	**100**	**158**	**100**	**177**	**100**	**456**	**100**	**2096**	***100***

Note the unemployment/student group contains parents seeking work but unemployed, not seeking work and students. The level of maternal employment in the sample shows a clear socio-economic trend such that higher socio-economic groups have higher levels of maternal employment (Spearman's r_s = .439, p< .0001). This pattern holds when only those in employment are considered. However, it is clear that part-time employment (less than 30 hours per week) is more common overall, and even for the highest socio-economic groups, that have the highest levels of full-time employment, the level of part-time employment is almost equal to the level of full-time employment.

TABLE 1.10: PATERNAL EMPLOYMENT AND TYPE OF PRE-SCHOOL CENTRE.

Father full/part employed	Type of pre-school centre								Total	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
unemployed	78	*16.4*	57	*11.9*	11	*2.5*	60	*27.1*	**206**	***12.7***
1- 8 hours	2	*0.4*	0	*0*	0	*0*	0	*0*	**2**	***.1***
9-19 hours	7	*1.5*	4	*0.8*	3	*0.7*	4	*1.8*	**18**	***1.1***
20-29 hours	9	*1.9*	10	*2.1*	4	*0.9*	7	*3.2*	**30**	***1.9***
Full time	381	*79.9*	407	*85.1*	425	*95.9*	150	*67.9*	**1363**	***84.2***
Total	**477**	***100***	**478**	***100***	**443**	***100***	**221**	***100***	**1619**	***100***

The fathers in the private day nursery group show the highest levels of employment, followed by the playgroup fathers and nursery class fathers. The fathers in the LA centre group show the highest levels of unemployment. Part-time employment for fathers is at a low level throughout.

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TABLE 1.11: PATERNAL EMPLOYMENT AND SOCIO-ECONOMIC STATUS.

Father Full/part employment	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
Unemployed	13	*1.9*	15	*3.0*	4	*2.7*	7	*6.0*	167	*100*	**206**	***12.8***
1-8 hours	0	*0*	0	*0*	1	*0.7*	1	*0.9*	0	*0*	**2**	***0.1***
9-19 hours	5	*0.7*	4	*0.8*	4	*2.7*	5	*4.3*	0	*0*	**18**	***1.1***
20-29 hours	9	*1.3*	11	*2.2*	1	*0.7*	8	*6.9*	0	*0*	**29**	***1.8***
Full-time	657	*96.1*	469	*94.0*	138	*93.2*	95	*81.9*	0	*0*	**1359**	***84.2***
Total	**684**	**100**	**499**	**100**	**148**	**100**	**116**	**100**	**167**	**100**	**1614**	***100***

There is a clear socio-economic trend in paternal employment ($r_s = .106$, $p < .0001$, for employed fathers only), but not as marked as for maternal employment. The differences in the level of employment for mothers and fathers are very great, with part-time employment a rarity for fathers, but more common than full-time for mothers.

While the level of father's employment for families using different types of pre-school centre appear to follow socio-economic differences, the same is only partly true for mother's level of paid employment. Mother's level of full-time employment is greatest for the private day nursery and LA centre groups. While the private day nursery group clearly has a much higher proportion of mothers in higher status jobs, the same is not true of the LA centres. However private day nurseries and LA centres offer the highest level of provision, usually up to full time. It is rare for nursery classes and playgroups to offer full-time provision, and when they do the actual hours of provision are still less than for private day nurseries and LA centres. Hence the higher level of maternal employment associated with private day nurseries and LA centres is linked to the higher level of provision. The next section considers the level of parental employment and the use of childcare.

Level of parental employment and use of childcare

The parental interview contained a section dealing with the use of childcare before the target children entered the study. This information was used to establish several measures of previous childcare including the total number of hours that the child had been in childcare up to the start of the study. These different aspects of childcare are considered in a later section of this paper. The level of paid employment by the parents was correlated with the total amount of childcare used before entering the EPPE study. The correlations are shown in table 1.12.

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TABLE 1.12: CORRELATIONS BETWEEN PARENTS' CURRENT HOURS OF PAID EMPLOYMENT AND PREVIOUS CHILDCARE USE.

	Type of pre-school centre				*Total*
	Nursery Class	Playgroup	Private DN	LA centre	
Mother's hours X Hours of previous childcare	0.42	0.40	0.57	0.53	0.52
Father's hours X Hours of previous childcare	0.15	0.08	0.006	0.30	0.13

There are significant substantial correlations across all pre-school groups between mother's current hours of paid employment and total childcare used up to the start of the study. The relationships are most pronounced for the private day nursery and LA centre groups. Clearly, mother's level of current paid employment is strongly related to previous childcare use.

The pattern of correlations between father's paid employment and previous use of childcare is rather different. There is no significant relationship for the playgroup and private day nursery parents. There is a slight relationship (r = 0.15) for the nursery class parents and there is a stronger relationship for the LA centre parents (r = 0.30). This pattern follows the pattern of correlations between mother's and father's hours of paid employment. There is no significant relationship between mother's and father's hours of paid employment for the playgroup and private day nursery parents. There are significant relationships for the nursery class parents (r = 0.22) and the LA centre parents (r = 0.41).

Overall, there are strong relationships between mother's hours of paid employment and previous childcare. These relationships are strongest for the private day nursery and the LA centre parents. It would appear that the relationships between father's hours of paid employment and previous childcare are a consequence of the pattern of correlations between mother's and father's hours of paid employment.

The relationship between level of paid employment and use of the target pre-school centre at the start of the study was examined. The number of sessions and number of hours were related to parents' level of paid employment.

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TABLE 1.13: SESSIONS IN CENTRE AND LEVEL OF MOTHER'S EMPLOYMENT.

Sessions	*Level of mother's employment*										*Total*	
	Unemployed Student		1-8 Hours		9-19 Hours		20-29 Hours		Full-time			
	N	%	N	%	N	%	N	%	N	%	N	%
2.00	98	*9.8*	16	*18.0*	47	*15.9*	27	*10.2*	18	*4.0*	**206**	***9.8***
3.00	126	*12.6*	18	*20.2*	46	*15.5*	35	*13.2*	49	*10.8*	**274**	***13.1***
4.00	110	*11.0*	12	*13.5*	44	*14.9*	41	*15.5*	43	*9.5*	**250**	***11.9***
5.00	4.6	*40.7*	36	*40.4*	115	*38.9*	96	*36.2*	123	*27.2*	**776**	***37.0***
6.00	32	*3.2*	1	*1.1*	14	*4.7*	23	*8.7*	18	*4.0*	**88**	***4.2***
7.00	2	0.2	0	0	1	0.3	2	0.8	1	0.2	**6**	***0.3***
8.00	8	0.8	0	0	3	1.0	5	1.9	27	6.0	**43**	***2.0***
9.00	7	0.7	0	0	0	0	1	0.4	6	1.3	**14**	***0.6***
10.00	208	20.9	6	6.7	26	8.8	35	13.2	167	36.9	**442**	***21.1***
Total	**997**	**100**	**89**	**100**	**196**	**100**	**265**	**100**	**452**	**100**	**2099**	***100***

This table reveals a trend whereby where the mother works longer hours, the child attends more sessions (Spearman's r_s =0.1, p< 0.001). The major exceptions to this trend are the 208 cases where the mother is not in paid employment yet the child attends 10 sessions a week. Of these 208 cases, 126 are in LA centres, 68 are in nursery classes, 10 are in private day nurseries and 4 are in a playgroup, i.e. over half are using LA centres.

The relationship between the parents' number of hours of paid employment and the number of hours the child attends the target pre-school centre was examined by means of Pearson correlations. Table 1.14 shows these correlations.

TABLE 1.14: CORRELATIONS BETWEEN PARENTS' HOURS OF PAID EMPLOYMENT AND USE OF TARGET PRE-SCHOOL CENTRE.

	Type of pre-school centre				*Total*
	Nursery Class	Playgroup	Private DN	LA centre	
Mother's hours X Hours in centre	-0.04	-0.03	0.48	0.40	0.31
Father's hours X Hours in centre	-0.18	-0.19	-0.14	+0.13	0.10

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The correlations reveal that there are significant substantial correlations between mother's hours of paid employment and the time the child spends in the target pre-school centre for the private day nursery and LA centre groups. There is no significant relationship for the nursery classes or playgroups. Therefore only for the private day nurseries and LA centres is mother's level of paid employment a significant factor in the amount of use of the target centre. Table 1.8 reveals that there are 13-16% of mothers using nursery classes or playgroups who are employed full-time. It is probable that these families have additional childcare arrangements to that provided by the target centres.

When the relationship between father's hours of paid employment and hours the child spends in the target pre-school centre is considered, a very different pattern emerges. For three groups, nursery classes, playgroups or private day nurseries, there is a significant but small negative correlation, implying that where fathers work fewer hours, the child spends more time in the LA centre. However, for the LA centres, there is a significant but small positive correlation, implying that where fathers work more hours, the child spends more time at the target centre. This different pattern for the LA centres may be linked to the substantially higher correlation between mother's hours of paid employment and father's hours of paid employment for the LA centre parents (r = 0.41). The correlations between mother's and father's hours of paid employment for the other groups are nursery class (r = 0.22), playgroup (r = 0.08) and private day nursery (r = 0.06), i.e. while the nursery class parents show a slight relationship in hours of work, there is none for the playgroup and private day nursery parents.

In a later section of this paper the use of pre-school provision and childcare history is considered in terms of type of pre-school centre currently used and socio-economic status of the family.

Marital status

Parents were asked to describe their marital status during the interview.

TABLE 1.15: MARITAL STATUS AND TYPE OF PRE-SCHOOL CENTRE.

Marital status	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
Lone parent, never married	59	*10.1*	76	*12.6*	32	*6.3*	132	*31.5*	**299**	***14.1***
Live with partner, never married	83	*14.2*	101	*16.7*	49	*9.6*	66	*15.8*	**299**	***14.1***
Married	381	*65.1*	364	*60.3*	392	*76.7*	153	*36.5*	**1290**	***60.9***
Separated/divorced	58	*9.9*	62	*10.3*	35	*6.8*	65	*15.5*	**220**	***10.4***
Widow/widower	0	*0*	0	*0*	1	*0.2*	2	*0.5*	**3**	***0.1***
Other	4	*0.7*	1	*0.2*	2	*0.4*	1	*0.2*	**8**	***0.4***
Total	**585**	***100***	**604**	***100***	**511**	***100***	**419**	***100***	**2119**	***100***

Pre-school groups differ significantly in marital status (χ^2 = 219.1, df = 15, $p < .0001$). Lone parents are most common within the LA centre group, and least common amongst the private day nursery group. Nursery class and playgroup parents show similar patterns.

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TABLE 1.16: MARITAL STATUS AND SOCIO-ECONOMIC STATUS OF FAMILY.

Marital status	***Socio-economic status of family***										***Total***	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed			
	N	%	N	%	N	%	N	%	N	%	N	%
Lone parent, never married	14	*1.9*	53	*9.2*	10	*6.2*	43	*24.0*	178	*38.5*	**298**	***14.1***
Live with partner, never married	90	*12.3*	87	*15.1*	36	*22.2*	30	*16.8*	55	*11.9*	**298**	***14.1***
Married	591	*80.5*	400	*69.4*	105	*64.8*	86	*48.0*	103	*22.3*	**1285**	***60.8***
Separated/divorced	38	*5.2*	32	*5.6*	10	*6.2*	20	*11.2*	121	*26.2*	**221**	***10.5***
Widow / widower	0	*0*	1	*0.2*	0	*0*	0	*0*	2	*0.4*	**3**	***0.1***
Other	1	0.1	3	0.5	1	0.6	0	0	3	0.6	**8**	***0.4***
Total	**734**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2113**	***100***

Overall socio-economic groups show significant differences in marital status (χ^2 = 639.1,df = 20, p< .0001). There is a clear socio-economic gradient with lone parents, whether never married or separated/divorced, being by far the most common in the unemployed/student group, followed by the semi-skilled and unskilled group. The two skilled groups show similar patterns of marital status and the professional/intermediate groups show the highest level of two parent and married parents.

Parental age

The parents' ages discussed in this section refer to age at the time when the parental interview took place. For most parents this occurred when the child was between three and four years of age. The mother's age varied with type of pre-school centre as follows:

TABLE 1.17: MOTHER'S AGE AND TYPE OF PRE-SCHOOL CENTRE.

Mother's age group	***Type of pre-school centre***								***Total***	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
16-20yrs	3	*0.5*	8	*1.3*	0	*0*	8	*1.9*	**13**	***0.9***
21-25yrs	69	*11.9*	71	*11.8*	20	*3.9*	65	*15.7*	**225**	***10.7***
26-35yrs	363	*62.4*	415	*68.9*	289	*56.9*	230	*55.4*	**1297**	***61.6***
36-45yrs	141	*24.2*	107	*17.8*	191	*37.6*	103	*24.8*	**542**	***25.7***
46-55yrs	6	*1.0*	1	*0.2*	8	*1.6*	3	*0.7*	**18**	***0.9***
56-65yrs	0	*0*	0	*0*	0	*0*	6	*1.4*	**6**	***0.3***
Total	**582**	***100***	**602**	***100***	**508**	***100***	**415**	***100***	**2107**	***100***

Maternal age differs significantly across pre-school groups (χ^2 = 128.5, df = 15, p< .001). The mothers in the private day nursery group tended to be older with over a third over 36 years of age. The other groups were rather similar with regard to maternal age.

TABLE 1.18: MOTHER'S AGE AND SOCIO-ECONOMIC STATUS OF FAMILY.

Mother's age group	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
16-20yrs	0	*0*	4	*0.7*	0	*0*	2	*1.1*	13	*2.9*	**19**	***0.9***
21-25yrs	10	*1.4*	50	*8.7*	26	*16.1*	38	*21.5*	100	*21.9*	**224**	***10.7***
26-35yrs	413	*56.3*	395	*68.8*	106	*65.8*	106	*59.9*	273	*59.9*	**1293**	***61.5***
36-45yrs	301	*41.0*	122	*21.3*	29	*18.0*	27	*15.3*	63	*13.8*	**542**	***25.8***
46-55yrs	10	*1.4*	3	*0.5*	0	*0*	1	*0.6*	4	*0.9*	**18**	***0.9***
56-65yrs	0	0	0	0	0	0	3	1.7	3	0.7	**6**	***0.3***
Total	**734**	**100**	**574**	**100**	**161**	**100**	**177**	**100**	**456**	**100**	**2102**	***100***

Socio-economic status is related to maternal age (r_s = .333, p< .0001). The professional/intermediate group had over 40% of mothers over 36 years of age; a proportion that was more than twice that of the rest of the sample. There isa socio-economic trend that the higher the group, the higher the proportion of mothers in the older age groups.

TABLE 1.19: FATHER'S AGE AND TYPE OF PRE-SCHOOL CENTRE.

Father's age group	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
21-25yrs	22	*4.5*	25	*5.1*	5	*1.1*	4	*1.8*	**56**	***3.4***
26-35yrs	257	*52.6*	296	*59.8*	195	*42.7*	108	*48.0*	**856**	***51.4***
36-45yrs	185	*37.8*	157	*31.7*	218	*47.7*	94	*41.8*	**654**	***39.3***
46-55yrs	24	*4.9*	16	*3.2*	37	*8.1*	17	*7.6*	**94**	***5.6***
56-65yrs	1	*0.2*	1	*0.2*	2	*0.4*	1	*0.4*	**5**	***0.3***
66-75yrs	0	*0*	0	*0*	0	*0*	1	*0.4*	**1**	***0.1***
Total	**489**	***100***	**495**	***100***	**457**	***100***	**225**	***100***	**1666**	***100***

Father's age differs amongst the pre-school groups significantly (χ^2 = 64.1,df = 15, p< .0001). Younger fathers are more prevalent for the nursery class and playgroup children. However, the total number of fathers in the LA group is half that of the other groups reflecting the large number of 'unavailable' fathers for this group. It is quite likely that the 'unavailable' fathers may well be in the younger age groups bearing in mind the age distribution of the LA centre mothers.

TABLE 1.20: FATHER'S AGE AND SOCIO-ECONOMIC STATUS OF THE FAMILY.

Father's age group	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
21-25yrs	4	*0.6*	20	*3.9*	7	*4.6*	10	*8.2*	15	*8.2*	**56**	***3.4***
26-35yrs	281	*40.4*	302	*59.3*	102	*67.5*	66	*54.1*	102	*55.7*	**853**	***51.4***
36-45yrs	356	*51.1*	164	*32.2*	38	*25.2*	39	*32.0*	55	*30.1*	**652**	***39.3***
46-55yrs	53	*7.6*	22	*4.3*	4	*2.6*	7	*5.7*	8	*4.4*	**94**	***5.7***
56-65yrs	2	*0.3*	1	*0.2*	0	*0*	0	*0*	2	*1.1*	**5**	***0.3***
66-75yrs	0	0	0	0	0	0	0	0	1	0.5	**1**	***0.1***
Total	**696**	**100**	**509**	**100**	**151**	**100**	**122**	**100**	**183**	**100**	**1661**	***100***

Socio-economic status is related to paternal age (r_s = .235, p< .0001). There is a socio-economic trend for fathers to be younger in the lower socio-economic groups. This trend would probably be more pronounced if it were not for the large number of 'unavailable' fathers in the lower socio-economic groups.

Educational qualifications of the parents

Parents were asked about their education and the highest qualification that they had achieved. Comparisons are based on parents' higher educational qualification.

TABLE 1.21: EDUCATIONAL QUALIFICATIONS OF MOTHER AND TYPE OF PRE-SCHOOL CENTRE.

Educational Qualification of mother	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
None	130	*22.4*	108	*18.0*	27	*5.3*	116	*28.3*	**381**	***18.2***
16 vocational	12	*2.1*	11	*1.8*	6	*1.2*	6	*1.5*	**35**	***1.7***
16 academic	252	*43.4*	279	*46.4*	157	*31.0*	113	*27.6*	**801**	***38.2***
18 vocational	67	*11.6*	77	*12.8*	42	*8.3*	65	*15.9*	**251**	***12.0***
18 academic	37	*6.4*	49	*8.2*	69	*13.6*	28	*6.8*	**183**	***8.7***
Degree Or equivalent	58	*10.0*	55	*9.2*	122	*24.1*	59	*14.4*	**294**	***14.0***
Higher degree	17	*2.9*	10	*1.7*	66	*13.0*	16	*3.9*	**109**	***5.2***
Other professional	2	*0.3*	7	*1.2*	8	*1.6*	3	*0.7*	**20**	***1.0***
Other misc.	5	*0.9*	5	*0.8*	9	*1.8*	4	*1.0*	**23**	***1.1***
Total	**580**	***100***	**601**	***100***	**506**	***100***	**410**	***100***	**2097**	***100***

Pre-school groups differ significantly ($\chi^2 = 283.6$, df = 24, $p < .0001$). The mothers in the private day nursery group show a higher level of educational qualifications than the rest of the sample. The LA centre mothers have the highest proportion with no qualifications, but also the second highest proportion with a degree or better qualifications suggesting that there may be considerable diversity in this group. This reflects the admissions policies of several local authorities to their pre-school centres, where they maintain a quota of fee-paying places, usually used by parents with higher socio-economic status and educational qualifications than the non fee-paying parents in these centres. The nursery class and playgroup mothers show similar levels of qualifications.

These differences show great similarity to the socio-economic differences of the groups just described and follow the general pattern found in much research of the high correlation between socio-economic classification and educational qualifications. The small numbers within the sample whose highest qualifications are classified as other professional and other miscellaneous do not affect this overall pattern. Usually these qualifications would be categorised just below degree level.

TABLE 1.22: EDUCATIONAL QUALIFICATIONS OF MOTHER AND SOCIO-ECONOMIC STATUS OF FAMILY.

Educational qualification of mother	Socio-economic status of family										Total	
	Professional Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
None	21	2.9	60	10.5	47	29.4	59	33.5	193	42.7	**380**	**18.2**
16 vocational	8	1.1	13	2.3	4	2.5	1	0.6	9	2.0	**35**	**1.7**
16 academic	168	23.0	319	55.8	75	46.9	81	46.0	154	34.1	**797**	**38.1**
18 vocational	59	8.1	92	16.1	21	13.1	25	14.2	54	11.9	**251**	**12.0**
18 academic	98	13.4	55	9.6	8	5.0	5	2.8	18	4.0	**184**	**8.8**
Degree Or equivalent	246	33.6	26	4.5	2	1.3	4	2.3	15	3.3	**293**	**14.0**
Higher degree	100	13.7	3	0.5	0	0	0	0	6	1.3	**109**	**5.2**
Other professional	18	2.5	2	0.3	0	0	0	0	0	0	**20**	**1.0**
Other misc.	14	1.9	2	0.3	3	1.9	1	0.6	3	0.7	**23**	**1.1**
Total	**732**	**100**	**572**	**100**	**160**	**100**	**176**	**100**	**452**	**100**	**2092**	**100**

Maternal educational qualifications show a very strong association with socio-economic status ($r_s = 0.58$, $p < .0001$). Almost half of the professional/intermediate group have a degree or higher degree qualification, while more than 40% of the unemployed/student group have no qualifications. Apart from the other professional and miscellaneous categories, where there are small numbers, there is a clear trend across socio-economic classifications for all qualifications.

TABLE 1.23: EDUCATIONAL QUALIFICATIONS OF FATHER AND TYPE OF PRE-SCHOOL CENTRE.

Qualification of father	Type of pre-school centre								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
None	100	*21.8*	119	*25.1*	23	*5.3*	59	*26.7*	**301**	***18.9***
16 vocational	5	*1.1*	4	*0.8*	5	*1.1*	4	*1.8*	**18**	***1.1***
16 academic	160	*34.9*	162	*34.2*	109	*24.9*	54	*24.4*	**485**	***30.5***
18 vocational	50	*10.9*	65	*13.7*	56	*2.8*	28	*2.7*	**199**	***12.5***
18 academic	50	*10.9*	41	*8.6*	50	*11.4*	20	*9.0*	**161**	***10.1***
Degree	64	*19.9*	57	*12.0*	114	*26.1*	39	*17.6*	**274**	***17.2***
Higher degree	25	*5.4*	17	*3.6*	71	*16.2*	14	*6.3*	**127**	***8.0***
Other professional	0	*0*	2	*0.4*	5	*1.1*	1	*0.5*	**8**	***0.5***
Other misc.	5	*1.1*	7	*1.5*	4	*0.9*	2	*0.9*	**18**	***1.1***
Total	**459**	***100***	**474**	***100***	**437**	***100***	**221**	***100***	**1591**	***100***

Pre-school groups differ significantly on father's qualifications (χ^2 = 169.2, df = 26, $p < .0001$). Father's qualifications are highest in the private day nursery group with 42% having a degree or higher degree qualification. The results for the LA centre fathers are greatly affected by the large number of 'unavailable' fathers in this group. It may well be that the pattern of fathers' qualifications for this group would be lower had the data on the fathers been available, but this is speculation. As the data stand, the fathers of children using LA centres show the highest level of no qualifications (26.7%) which is slightly higher than for the fathers of children using playgroups (25.1). However, the LA centre fathers also have almost 24% who have a degree or higher degree qualification, which is higher than playgroup fathers (15.6%). As with mother's qualifications, this reflects admission quotas to LA centres. This suggests considerable diversity in the LA centre sample, and possibly two rather different social groups using this type of provision. This is an issue for subsequent papers.

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TABLE 1.24: FATHER'S QUALIFICATIONS AND SOCIO-ECONOMIC STATUS

Educational Qualification of father	Socio-economic status of family										Total	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
None	25	3.7	82	17.2	46	32.9	57	51.8	91	50.8	**301**	**19.0**
16 vocational	6	0.9	5	1.0	3	2.1	1	0.9	3	1.7	**18**	**1.1**
16 academic	137	20.1	215	45.1	50	35.7	37	33.6	44	24.6	**483**	**30.4**
18 vocational	64	9.4	82	17.2	28	20.0	8	7.3	17	9.5	**199**	**12.5**
18 academic	81	11.9	54	11.3	9	6.4	5	4.5	12	6.7	**161**	**10.1**
Degree Or equivalent	233	34.2	32	6.7	2	1.4	1	0.9	5	2.8	**273**	**17.2**
Higher degree	118	17.3	4	0.8	0	0	0	0	5	2.8	**127**	**8.0**
Other professional & miscellaneous	18	2.7	3	0.6	2	1.4	1	0.9	2	1.1	**26**	**1.6**
Total	**682**	**100**	**477**	**100**	**140**	**100**	**110**	**100**	**179**	**100**	**1588**	**100**

As with mother's qualifications, there is a very strong association between father's qualifications and socio-economic status ($r_s = 0.61$, $p < .0001$). This is attentuated somewhat by the large number of 'unavailable' fathers in the lowest socio-economic groups.

Summary of parental characteristics

Parental characteristics in terms of levels of employment, marital status, age and educational qualifications all show associations with the socio-economic status of the family. The differences in these parental characteristics between the four pre-school groups very closely parallel the socio-economic differences. Hence, such differences can be regarded as part of the variation in the sample associated with socio-economic variation. A partial exception to this pattern concerns the level of degree or better qualifications for mothers using LA centres which is higher than would be expected from socio-economic characteristics. Another exception to this pattern is the relationship between level of maternal employment and use of pre-school centres. The relationship is distinctly greater for the mothers using private day nurseries and LA centres, and does not reduce to socio-economic differences.

There is a qualification concerning the 'unavailable' fathers to these conclusions. The distribution of 'unavailable' fathers varies by type of pre-school. There are 197 for the LA centre families, 121 and 126 for the nursery class and playgroup families and 72 for the private day nursery families. Hence the statistics for the LA centres are most affected, in that for almost half the families data on the child's father are not available, while the figure for families using nursery class and playgroup is around 20%, and for families using a private day nursery, 14%. Hence the comparisons using father's data may well be biased particularly for the families using LA centres, in that 'unavailable' fathers are probably not randomly distributed in their socio-economic and demographic characteristics.

THE FAMILY

Family composition

The interviewer asked who lived in the same household as the study child. From the answers given, a typology of families was constructed. These family types were:

1. Lone parent – one parent and no other adult living with the study child
2. Two parent – both parents and no other adult living with the study child.
3. Extended family – one or both parents and other adult living with child.
4. Foster/grandparent – a foster parent or grandparent lives with child, but neither parent does.
5. Adoptive family – child living with adoptive parents.
6. Family information unavailable*

> **Note that the families for whom information is unavailable were families where there had been many repeated attempts to interview a parent. Very extensive efforts have been made to acquire a parental interview and these parents present significant problems with regard to access to family information.*

The proportion of children with a lone parent in the sample is 21%, which is close to the 20% of UK households with dependent children that are lone parent families (Office for National Statistics, 1999).

Type of pre-school centre

Family type varied between the pre-school groups as shown in table 18, the overall differences are significant ($\chi^2 = 182.6$, df = 15, $p < .0001$).

TABLE 2.1: TYPE OF PRE-SCHOOL CENTRE AND FAMILY TYPE.

Family Type	***Type of pre-school centre***								***Total***	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Lone parent	107	*18.2*	112	*18.4*	55	*10.7*	173	*40.0*	**447**	***20.8***
Two parent	439	*74.7*	442	*72.6*	401	*77.7*	199	*46.0*	**1481**	***69.0***
Parent and Extended	30	*5.1*	39	*6.4*	44	*8.5*	28	*6.5*	**141**	***6.6***
Foster/ Grandparent	9	*1.5*	10	*1.6*	8	*1.6*	17	*3.9*	**44**	***2.1***
Adopted	0	*0*	1	*0.2*	3	*0.6*	3	*0.7*	**7**	***0.3***
Family info unavailable	3	*0.5*	5	*0.8*	5	*1.0*	13	*3.0*	**26**	***1.2***
Total	**588**	***100***	**609**	***100***	**516**	***100***	**433**	***100***	**2146**	***100***

differences in their use of pre-school centres to two-parent families. Foster/grandparent families were three times more likely to use a LA centre than two parent families. Half of the families where all family information was unavailable used LA centres. The largest family type was the two-parent families who made up 69% of the sample. Comparing the other family types to this majority group revealed several differences. Two-parent families were equally likely to use a nursery class, playgroup or private day nursery, but only half as likely to use a LA centre. Lone parent families used LA centres more than any other type of pre-school centre and were the least likely to use a private day nursery. Approximately a quarter of lone parents used a nursery class and a quarter a playgroup. However only an eighth used a private day nursery. Extended families showed only slight

Family type varied with socio-economic status of the family as shown in table 2.2.

TABLE 2.2: SOCIO-ECONOMIC STATUS AND FAMILY TYPE.

Family type	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
Lone parent	41	*5.6*	74	*12.8*	20	*12.3*	51	*28.5*	261	*56.5*	**447**	***21.2***
Two parent	624	*85.0*	464	*80.6*	133	*82.1*	102	*57.0*	152	*32.9*	**1475**	***69.8***
Parent + Extended	63	*8.6*	26	*4.5*	8	*4.9*	18	*10.1*	26	*5.6*	**141**	***6.7***
Foster/ Grandparent	2	*0.3*	11	*1.9*	0	*0*	7	*3.9*	23	*5.0*	**43**	***2.0***
Adopted	4	*0.5*	1	*0.2*	1	*0.6*	1	*0.6*	0	*0*	**7**	***0.3***
Total	**734**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2113**	***100***

The overall differences are significant ($\chi^2 = 571.4$, df = 16, $p < .0001$). Two-parent families were the family type least likely to be in the unemployed/student group (apart from the very small adoptive group where there was no unemployment). Lone parent families were frequently in the unemployed/student group (58.3%) and overall were of lower socio-economic status than two-parent families. The major differences between extended families and two parent families were the higher level of unemployment for extended families and their lower presence in the skilled classifications.

Ethnicity and language

The language used by the child in the home was regarded as the child's first language. For 92.8% of the children this language was English. For those children whose first language was not English, there were 47 different languages used by children in the study. Language varied with type of pre-school as shown in table 2.3.

TABLE 2.3: FIRST LANGUAGE OF CHILD AND TYPE OF PRE-SCHOOL CENTRE.

English first language	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
English	528	*90.3*	558	*92.4*	502	*98.2*	379	*90.2*	**1967**	***92.8***
Not English	57	*9.7*	46	*7.6*	9	*1.8*	41	*9.8*	**153**	***7.2***
Total	**585**	***100***	**604**	***100***	**511**	***100***	**420**	***100***	**2120**	***100***

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There are significant overall differences ($\chi^2 = 32.5$, df = 3, $p < .0001$). The lowest representation of children whose first language was not English was amongst the private day nurseries. All the other pre-school groups had similar levels of children whose first language was not English.

Children whose first language was English and whose first language was not English were distributed across the socio-economic groups as shown in table 2.4.

TABLE 2.4: FIRST LANGUAGE OF CHILD AND SOCIO-ECONOMIC STATUS OF FAMILY.

English first language	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
English	700	*95.4*	547	*95.0*	147	*90.7*	156	*87.2*	411	*89.0*	**1961**	***92.8***
Not English	34	*4.6*	29	*5.0*	15	*9.3*	23	*12.8*	51	*11.0*	**152**	*7.2*
Total	**734**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2113**	***100***

Socio-economic differences are significant overall ($\chi^2 = 31.1$, df = 4, $p < .0001$). The children whose first language was not English make up a higher proportion of the sample for the lower socio-economic groups. The top three socio-economic groups contain a lower proportion of these children. The lower representation for private day nurseries reflects the higher socio-economic profile of families using this type of pre-school.

The ethnic distribution of the children in the sample included 77% of children of white UK heritage and 23% of children were of ethnic minorities. There were 4% of children of white European heritage and 6% of children were of black heritage (Caribbean, African or other black), 4.5% of south Asian heritage (Indian, Pakistani, or Bangladeshi), and 6.5% of mixed heritage. There were only two children of Chinese heritage (0.2%) and 1.4% belonged to other ethnic minorities. Ethnicity varied significantly between the pre-school centres ($\chi^2 = 292.5$, df = 30, $p < .0001$).

TABLE 2.5. ETHNICITY AND TYPE OF PRE-SCHOOL CENTRE

Ethnicity	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
White UK	472	*80.3*	482	*79.1*	460	*89.3*	242	*55.9*	**1656**	***77.2***
White Euro	21	*3.6*	21	*3.4*	26	*5.0*	18	*4.2*	**86**	***4.0***
Black Caribbean	13	*2.2*	9	*1.5*	4	*0.8*	48	*11.1*	**74**	***3.4***
Black African	10	*1.7*	12	*2.0*	0	*0*	26	*6.0*	**48**	***2.2***
Black Other	2	*0.3*	1	*0.2*	0	*0*	6	*1.4*	**9**	***0.4***
Indian	4	*0.7*	16	*2.6*	6	*1.2*	5	*1.2*	**31**	***1.4***
Pakistani	16	*2.7*	25	*4.1*	1	*0.2*	16	*3.7*	**58**	***2.7***
Bangladeshi	8	*1.4*	0	*0*	0	*0*	1	*0.2*	**9**	***0.4***
Chinese	2	*0.3*	1	*0.2*	1	*0.2*	0	*0*	**4**	***0.2***
Other	13	*2.2*	4	*0.7*	1	*0.2*	13	*3.0*	**31**	***1.4***
Mixed Heritage	27	*4.6*	38	*6.2*	16	*3.1*	58	*13.4*	**139**	***6.5***
Total	**588**	***100***	**609**	***100***	**515**	***100***	**433**	***100***	**2145**	***100***

LA centres had the highest proportions of ethnic minority children (44.1%), while the private day nursery children were least likely to belong to an ethnic minority (10.7%) and for those in an ethnic minority using private day nurseries, half were of white European heritage. There is little difference in the representation of ethnic minority children between nursery classes and playgroups, whose representation is close to that of the total sample, being around 20%.

TABLE 2.6: ETHNICITY AND SOCIO-ECONOMIC STATUS.

Ethnicity	***Socio-economic status of family***										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
White UK	600	*81.7*	467	*81.1*	133	*82.0*	124	*69.3*	309	*66.9*	**1633**	***77.3***
White Euro	45	*6.1*	17	*3.0*	3	*1.9*	3	*1.7*	17	*3.7*	**85**	***4.0***
Black Caribbean	10	*1.4*	16	*2.8*	4	*2.5*	17	*9.5*	26	*5.6*	**73**	***3.5***
Black African	4	*0.5*	16	*2.8*	5	*3.1*	3	*1.7*	20	*4.3*	**48**	***2.3***
Black Other	1	*0.1*	3	*0.5*	1	*0.6*	1	*0.6*	3	*0.6*	**9**	***0.4***
Indian	13	1.8	9	1.6	2	1.2	3	1.7	4	0.9	**31**	***1.5***
Pakistani	7	1.0	17	3.0	6	3.7	12	6.7	16	3.5	**58**	***2.7***
Bangladeshi	1	0.1	1	0.2	1	0.6	3	1.7	2	0.4	**8**	***0.4***
Chinese	1	0.1	0	0	2	1.2	1	0.6	0	0	**4**	***0.2***
Other	9	1.2	2	0.3	0	0	1	0.6	18	3.9	**30**	***1.4***
Mixed Heritage	43	5.9	28	4.9	5	3.1	11	6.1	47	10.2	**134**	***6.3***
Total	**734**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2113**	***100***

There are significant socio-economic differences in the ethnic distribution in the sample (χ^2 = 171.9, df = 40, p< .0001). The lowest socio-economic classifications of semi-skilled, unskilled and unemployed/student have a higher proportion of ethnic minorities than the higher socio-economic classifications.

Summary of family characteristics

Overall the differences in the family type, ethnicity and language use between the families using the four types of pre-school centres show a similar pattern to their socio-economic differences. The pattern is that the private day nursery group have the highest socio-economic profile, the nursery group and the playgroup families have an average socio-economic profile and the LA centre families have the lowest socio-economic profile. In line with these differences the families using LA centres contain the highest proportion of lone parents, and ethnic minority children. The private day nursery families contain the lowest proportion of lone parents and the lowest proportion of ethnic minorities.

CHILD'S PREVIOUS HEALTH, DEVELOPMENT AND BEHAVIOUR

Parents were asked a series of questions concerned with the child's health, development and behaviour since birth. The data from these questions have been used to compute a series of indices reflecting the child's health and development history. These indices deal with the perinatal period, health development and behaviour since birth up to the interview, and health in the last six months.

Perinatal period

Questions concerned with birthweight, prematurity, and early medical care were used to construct an index of perinatal health which takes account ofprematurity (less than 2.5kgs.), and early breathing, stomach, hearing or other difficulties. This index ranged from 0 (no difficulties to 6 (most difficulties). This index varied with type of pre-school centre as shown in table 3.1.

TABLE 3.1: PERINATAL PERIOD AND TYPE OF PRE-SCHOOL CENTRE.

Perinatal problems	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
0	487	*83.2*	484	*80.3*	410	*80.4*	330	*78.8*	**1711**	***80.8***
1	63	*10.8*	92	*15.3*	76	*14.9*	57	*13.6*	**288**	***13.6***
2	32	*5.5*	23	*3.8*	18	*3.5*	26	*6.2*	**99**	***4.7***
3	1	*0.2*	3	*0.5*	6	*1.2*	4	*1.0*	**14**	***0.7***
4	1	*0.2*	1	*0.2*	0	*0*	2	*0.5*	**4**	***0.2***
6	1	*0.2*	0	*0*	0	*0*	0	*0*	**1**	***0.0***
Total	**585**	***100***	**603**	***100***	**510**	***100***	**419**	***100***	**2117**	***100***

There were no significant differences between the children in the four pre-school centre groups with regard to perinatal health. The variation with socio-economic status is considered next.

TABLE 3.2: PERINATAL PERIOD AND SOCIO-ECONOMIC STATUS OF THE FAMILY.

Perinatal problems	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
0	603	*82.3*	463	*80.5*	132	*81.5*	157	*87.7*	351	*76.1*	**1706**	***80.9***
1	97	*13.2*	83	*14.4*	19	*11.7*	10	*5.6*	78	*16.9*	**287**	***13.6***
2	24	*3.3*	26	*4.5*	9	*5.6*	12	*6.7*	27	*5.9*	**98**	***4.6***
3	9	*1.2*	0	*0*	2	*1.2*	0	*0*	3	*0.7*	**14**	***0.7***
4	0	*0*	3	*0.5*	0	*0*	0	*0*	1	*0.2*	**4**	***0.2***
6	0	0	0	0	0	0	0	0	1	0.2	**1**	***0.0***
Total	**733**	**100**	**575**	**100**	**162**	**100**	**179**	**100**	**461**	**100**	**2110**	***100***

The children in the unemployed/student group appear very slightly below the other groups but there are no statistically significant differences.

Health, Development and Behaviour

Data were collected on the incidence and help/treatment received for health, developmental and behaviour problems since birth. From these data indices were calculated based upon incidence weighted by help/treatment received. Also parents were asked about the occurrence of life events that might have been potentially disruptive to the child's development.

Physical health since birth

TABLE 3.3: PREVIOUS HEALTH PROBLEMS AND TYPE OF PRE-SCHOOL CENTRE.

Previous health problems	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
None	422	*72.3*	421	*69.7*	339	*66.3*	271	*64.5*	**1453**	***68.6***
Low	118	*20.2*	127	*21.0*	122	*23.9*	91	*21.7*	**458**	***21.6***
Moderate	41	*7.0*	42	*7.0*	41	*8.0*	44	*10.5*	**168**	***7.9***
High	3	*0.5*	14	*2.3*	9	*1.8*	14	*3.3*	**40**	***1.9***
Total	**584**	***100***	**604**	***100***	**511**	***100***	**420**	***100***	**2119**	***100***

The children in the different pre-school centre groups show very small significant differences ($\chi^2 = 20.4$, df = 9, $p < .05$) in terms of their previous health problems. The nursery class children have slightly fewer previous health problems and the LA centre children slightly more than the children in private day nurseries and playgroups. The variation in terms of socio-economic status was then dealt with.

TABLE 3.4: PREVIOUS HEALTH PROBLEMS AND SOCIO-ECONOMIC STATUS.

Previous health problems	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
None	536	*73.0*	379	*65.8*	103	*63.6*	111	*62.0*	319	*69.0*	**1448**	***68.5***
Low	136	*18.5*	136	*23.6*	38	*23.5*	50	*27.9*	97	*21.0*	**457**	***21.6***
Moderate	49	*6.7*	51	*8.9*	14	*8.6*	16	*8.9*	38	*8.2*	**168**	***8.0***
High	13	*1.8*	10	*1.7*	7	*4.3*	2	*1.1*	8	*1.7*	**40**	***1.9***
Total	**734**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2113**	***100***

The professional/intermediate groups are marginally better in their previous health history, but the differences are slight ($r_s = 0.05$, $p < .05$).

Developmental problems since birth

TABLE 3.5: PREVIOUS DEVELOPMENTAL PROBLEMS AND TYPE OF PRE-SCHOOL CENTRE.

Previous development problems	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
None	537	*92.0*	535	*88.6*	467	*91.4*	368	*87.6*	**1907**	***90.0***
Low	6	*1.0*	5	*0.8*	10	*2.0*	0	*0*	**21**	***1.0***
Moderate	39	*6.7*	53	*8.8*	27	*5.3*	47	*11.2*	**166**	***7.8***
High	2	*0.3*	11	*1.8*	7	*1.4*	5	*1.2*	**25**	***1.2***
Total	**584**	***100***	**604**	***100***	**511**	***100***	**420**	***100***	**2119**	***100***

There are overall significant differences between pre-school groups ($\chi^2 = 27.6$, df = 9, $p < .001$). The nursery class and private day nursery children have slightly lower scores for previous developmental problems. The children using LA centres show a higher level of previous developmental problems. All of these differences involve small numbers of children, with the great majority of children (90%) reported as having no previous developmental problems

TABLE 3.6: PREVIOUS DEVELOPMENTAL PROBLEMS AND SOCIO-ECONOMIC STATUS.

Previous development problems	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
None	676	*92.1*	532	*92.4*	143	*88.3*	162	*90.5*	389	*84.2*	**1902**	**90.0**
Low	12	*1.6*	3	*0.5*	1	*0.6*	0	*0*	4	*0.9*	**20**	**0.9**
Moderate	41	*5.6*	35	*6.1*	15	*9.3*	16	*8.9*	59	*12.8*	**166**	*7.9*
High	10	*2.2*	25	*1.2*	5	*0.7*	6	*1.0*	3	*1.9*	**1**	**0.6**
Total	**734**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2113**	***100***

The unemployed/student groups are slightly worse on this index of previous developmental problems and as with the previous health index, the two highest socio-economic groups reported fewer problems (r_s = .09, p< .001). While the differences involve small numbers of children the unemployed/student group shows twice the level of moderate/high problems to the professional/intermediate and skilled non-manual groups. These differences may become important later in the study when considering children who are at the lower end of the developmental distribution.

Behaviour problems since birth

Parents were asked whether the child had presented any behaviour problems up to the present, and whether any professional help was sought for the problem. This information was used to produce the categorisation shown in tables 3.7 and 3.8.

TABLE 3.7: BEHAVIOUR PROBLEMS AND TYPE OF PRE-SCHOOL CENTRE.

Previous behaviour problems	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
None	524	*89.7*	535	*88.7*	460	*90.0*	348	*82.9*	**1867**	***88.1***
Low	20	*3.4*	19	*3.2*	18	*3.5*	20	*4.8*	**77**	**3.6**
Moderate	32	*5.5*	41	*6.8*	25	*4.9*	43	*10.2*	**141**	**6.7**
High	8	*1.4*	8	*1.3*	8	*1.6*	9	*2.1*	**33**	***1.6***
Total	**584**	***100***	**603**	***100***	**511**	***100***	**420**	***100***	**2118**	***100***

There are borderline significant differences between pre-school groups (χ^2 = 16.6, df = 9, p< .05). The LA centre children appear to have a higher level of behaviour problems noted by parents than the other children in the study with about twice as many behaviour problems being recorded. The other groups are very similar in the incidence of recorded behaviour problems.

TABLE 3.8: BEHAVIOUR PROBLEMS AND SOCIO-ECONOMIC STATUS OF THE FAMILY.

Previous behaviour problems	Socio-economic status of family										Total	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
None	663	*90.5*	518	*89.9*	145	*89.5*	151	*84.4*	384	*83.1*	**1861**	***88.1***
Low	29	*4.0*	15	*2.6*	4	*2.5*	8	*4.5*	21	*4.5*	**77**	**3.6**
Moderate	33	*4.5*	34	*5.9*	11	*6.8*	17	*9.5*	46	*10.0*	**141**	**6.7**
High	8	*1.1*	9	*1.6*	2	*1.2*	3	*1.7*	11	*2.4*	**33**	**1.6**
Total	**733**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2112**	***100***

The lowest socio-economic groups have higher levels of behaviour problems noted by their parents than the higher socio-economic groups (r_s = .09, p< .001). The lowest socio-economic groups reported about twice as many behaviour problems as the highest socio-economic groups. 17% of the unemployed/student parents reported some level of behaviour problem with their children. These differences may be important in considering later social and emotional developments.

Total health, developmental and behaviour problems

A summary index of all health, developmental and behaviour problems was computed and used to compare the pre-school centre groups.

TABLE 3.9: OVERALL PREVIOUS PROBLEMS AND TYPE OF PRE-SCHOOL CENTRE.

Previous problems-overall	Type of pre-school centre								Total	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
None	356	*61.0*	340	*56.4*	285	*55.8*	200	*47.6*	**1181**	***55.8***
Low	221	*37.8*	243	*40.3*	211	*41.3*	199	*47.4*	**874**	***41.3***
Moderate	7	*1.2*	16	*2.7*	15	*2.9*	21	*5.0*	**59**	***2.8***
High	0	*0*	4	*0.7*	0	*0*	0	*0*	**4**	***0.2***
Total	**584**	***100***	**603**	***100***	**511**	***100***	**420**	***100***	**2118**	***100***

There are overall significant differences between pre-school groups ($\chi^2 = 36.3$, df = 9, $p < .0001$). The children in the LA centres show a higher overall level of previous problems than the other children with children in the nursery class showing least problems.

TABLE 3.10: OVERALL PREVIOUS PROBLEMS AND SOCIO-ECONOMIC STATUS OF THE FAMILY.

Previous problems overall	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
None	449	*61.3*	322	*55.9*	86	*53.1*	90	*50.3*	230	*49.8*	**1177**	***55.7***
Low	269	*36.7*	240	*41.7*	67	*41.4*	83	*46.4*	213	*46.1*	**872**	***41.3***
Moderate	15	*2.0*	13	*2.3*	9	*5.6*	5	*2.8*	17	*3.7*	**59**	***2.8***
High	0	*0*	1	*0.2*	0	*0*	1	*0.6*	2	*0.4*	**4**	***0.2***
Total	**733**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2112**	***100***

There is a clear but small socio-economic gradient with lower socio-economic groups showing a higher level of overall previous problems ($r_s = 0.1$, $p < .0001$).

Recent Health (last 6 months)

In addition to previous health more detailed questions dealt with health in the last six months. The answers to these questions were used to construct an index based upon weighting the incidence of an illness by the treatment received and summating for all illnesses. Table 33 shows the comparison for type of pre-school centre and table 34 that for socio-economic status. In both cases the differences between groups appear to be minimal but with large variation indicated by the large standard deviations.

TABLE 3.11. HEALTH INDEX FOR LAST 6 MONTHS BY TYPE OF PRE-SCHOOL CENTRE

	Type of pre-school centre								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Health for last 6 months	14.6	*19.0*	17.0	*25.7*	15.3	*20.2*	15.2	*28.2*	15.6	*23.3*

An analysis of variance reveals that the differences between the groups are statistically significant (F = 4.23, df = 3, 2115, $p < .005$) and Scheffé post hoc companies reveal that this result is due to the difference between children using playgroups and LA centres. This was the only significant paired comparison.

TABLE 3.12. HEALTH INDEX FOR LAST 6 MONTHS BY SOCIO-ECONOMIC GROUP

	Socio-economic status of family										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	Mean	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***
Health for last 6 months	16.0	*25.4*	15.3	*18.9*	13.5	*17.0*	15.9	*21.0*	16.1	*27.2*	**15.6**	***23.3***

This index is based upon the number of days of illness, another index based upon separate illness bouts revealed a similar pattern. There is no variation related to socio-economic status. This was confirmed by a one way ANOVA, which produced no significant differences between socio-economic groups.

Life events for child

One question asked whether the child had experienced any event that may have adversely affected the child's development. Events included bereavement, moving house, birth of sibling, divorce/separation, parental illness, problems with sibling, transition between home/pre-school, birth trauma, family violence, accident/hospitalisation, parental absence, and other. The total of such events was calculated for each child, and used to compare children from the different pre-school centre and socio-economic status groups as shown in the following tables.

For the majority of children (67%) parents did not report anyevent which they may have had some influence on the child child's development. About a quarter of the sample reported one or two potentially disruptive events and 7.2% reported three or more such events. Partly these data reflect the memories and reporting tendencies of parents as well as the actual occurrence of such events.

TABLE 3.13: NUMBER OF DISRUPTIVE LIFE EVENTS AND TYPE OF PRE-SCHOOL CENTRE.

No. of disruptive life events	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
0	412	*70.7*	413	*68.4*	334	*65.4*	262	*62.5*	1421	*67.0*
1	1	*0.2*	6	*1.0*	4	*0.8*	8	*1.9*	19	*0.9*
2	129	*22.1*	142	*23.5*	141	*27.6*	112	*26.7*	523	*24.8*
3	33	*5.7*	34	*5.6*	26	*5.1*	29	*6.9*	122	*5.8*
4 +	8	*1.4*	9	*1.5*	6	*1.2*	8	*1.8*	32	*1.5*
Total	583	*100*	604	*100*	511	*100*	419	*100*	2117	*100*

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TABLE 3.14: NUMBER OF DISRUPTIVE LIFE EVENTS AND SOCIO-ECONOMIC STATUS OF FAMILY.

No. of disruptive life events	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
0	464	*63.2*	426	*74.0*	121	*74.7*	122	*68.2*	283	*61.4*	**1416**	***67.0***
1	7	*1.0*	7	*1.2*	1	*0.6*	0	*0*	4	*0.9*	**19**	***0.9***
2	203	*27.7*	117	*20.3*	32	*19.8*	46	*25.7*	125	*27.1*	**523**	***24.8***
3	50	*6.8*	22	*3.8*	6	*3.7*	7	*3.9*	37	*8.0*	**122**	***5.8***
4 +	10	*1.3*	4	*0.6*	2	*1.2*	4	*2.2*	12	*2.6*	**32**	***1.5***
Total	**734**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**461**	**100**	**2112**	***100***

There were no significant differences between either pre-school centre groups or socio-economic groups.

Summary of health, development and behaviour

When the information concerning the period from birth to the time of the interview is considered, there is a trend for more problems for lower socio-economic groups. The small differences between pre-school groups only partly reflect socio-economic variation. The higher incidence of problems in physical health, development and behaviour for the LA centre group may well reflect their socio-economic characteristics. However, the level of previous problems for the nursery class group, which is lower than that of the other groups, is not to be expected from the average socio-economic standing of this group.

Considering the last six months, the data on recent health reveals no significant differences either related to type of pre-school centre or socio-economic status. The data on potentially disruptive life events reveal only very slight differences between either pre-school groups or socio-economic groups

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CHILDREN'S ACTIVITIES IN THE HOME

The data available from the parent interview deal with TV watching, bedtime, activities with friends and others, and educational activities. The educational activities included reading, library visits, play with letters and numbers, painting and drawing, song and rhyme. An estimate of the frequency of these educational activities was established. From these data an index of educational activities has been established.

Educational activities

The index of the educational environment of the home varied from 0-31 and approximated a normal distribution over the whole sample. The variation in the index was considered across type of pre-school centre, and for socio-economic status.

TABLE 4.1: EDUCATIONAL ENVIRONMENT AND TYPE OF PRE-SCHOOL CENTRE.

	Type of pre-school centre								***Total***	
	Nursery Class		Playgroup		Private DN		LA centre			
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Educational Environment	16.3	*4.5*	15.9	*4.4*	17.9	*4.1*	15.5	*5.1*	16.4	*4.6*

There are significant differences between pre-school groups (ANOVA, F(3,2094) = 27.8, p< .0001). Scheffé post hoc comparisons revealed that the private day nursery group scored significantly higher than all the other groups. Also the nursery class group scored significantly higher than the LA centre group. Other differences were not statistically significant.

TABLE 4.2: EDUCATIONAL ENVIRONMENT AND SOCIO-ECONOMIC STATUS.

	Socio-economic status of family										***Total***	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	Mean	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***
Educational environment	18.1	*4.2*	16.6	*4.2*	15.5	*4.6*	15.1	*4.3*	14.7	*4.7*	**16.4**	***4.6***

Socio-economic status can be regarded as a structural variable, while educational activities may be regarded as a process variable. When viewed in this way, educational activities may be regarded as a part of the process whereby the structural variable of socio-economic status comes to have its effect on child development variables. Of course there would be more to this process than just educational activities but they may well be a part.

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Television watching in the home

The amount of TV watching in the home was compared across pre-school centre groups.

TABLE 4.3: AMOUNT OF TV AND TYPE OF PRE-SCHOOL CENTRE.

Amount of TV	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
Hours per day	N	%	N	%	N	%	N	%	N	%
0 hours	5	*0.9*	12	*2.0*	14	*2.7*	14	*3.3*	**45**	***2.1***
Up to 1 hour	164	*28.0*	155	*25.7*	247	*48.4*	183	*43.7*	**749**	***35.4***
1-3 hours	332	*56.8*	360	*59.7*	225	*44.1*	183	*43.7*	**1100**	***52.0***
3+ hours	84	*14.4*	76	*12.6*	24	*4.7*	39	*9.3*	**223**	***10.5***
Total	**585**	***100***	**603**	***100***	**510**	***100***	**419**	***100***	**2117**	***100***

There is less TV watching recorded for the children in the private day nursery group than for other children, but the difference is small. These differences are small but statistically significant ($\chi^2 = 114.6$, df = 9, p< .0001). The variation by socio-economic status was also examined.

TABLE 4.4: AMOUNT OF TV AND SOCIO-ECONOMIC STATUS OF THE FAMILY.

Amount of TV	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
Hours per day	N	%	N	%	N	%	N	%	N	%	N	%
0 hours	24	*3.3*	1	*0.2*	2	*1.2*	4	*2.2*	14	*3.0*	**45**	***2.1***
Up to 1 hour	351	*47.8*	192	*33.3*	40	*24.8*	51	*28.7*	115	*24.9*	**749**	***35.5***
1-3 hours	325	*44.3*	317	*55.0*	92	*57.1*	98	*55.1*	263	*57.0*	**1095**	***51.9***
3 hours +	34	*4.6*	66	*11.5*	27	*16.8*	25	*14.0*	69	*15.0*	**221**	***10.5***
Total	**734**	**100**	**576**	**100**	**161**	**100**	**178**	**100**	**461**	**100**	**2110**	***100***

There is a gradient of increasing TV watching as the socio-economic status groups become lower in status ($r_s = .21$, p< .0001). Overall around half of the children are reported to be watching TV or video for 1-3 hours daily.

Rules

In addition to asking about TV watching, the interview enquired whether the household had rules for children watching TV or video. Also parents were asked about regular bedtimes for children. Regarding TV and video, the pre-school centre groups results are shown here.

TABLE 4.5: RULES FOR TV OR VIDEO AND TYPE OF PRE-SCHOOL CENTRE.

Rules TV/video	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
Yes	315	*53.8*	306	*50.7*	306	*59.9*	217	*51.8*	**1144**	***54.0***
No	270	*46.2*	298	*49.3*	205	*40.1*	202	*48.2*	**975**	***46.0***
Total	**585**	***100***	**604**	***100***	**511**	***100***	**419**	***100***	**2119**	***100***

There were borderline significant differences between pre-school groups (χ^2 = 14.7,df = 6, p< .01). The private day nursery group were slightly more likely to have such rules than the other groups, reflecting the socio-economic status differences between pre-school centre groups. However, the LA centre families who have the lowest socio-economic profile show a similar likelihood of such a rule as nursery class and playgroup families. The relationship with socio-economic status is shown in the next table.

TABLE 4.6: RULES FOR TV OR VIDEO AND SOCIO-ECONOMIC STATUS.

Rules TV/video	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
Yes	467	*63.6*	304	*52.8*	80	*49.4*	81	*45.3*	205	*44.4*	**1137**	***53.8***
No	26.7	*36.3*	272	*47.2*	82	*50.6*	98	*54.7*	257	*55.6*	**976**	***46.2***
Total	**734**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2113**	***100***

There is a clear gradient with higher socio-economic groups being more likely to have rules concerning children watching TV or video (r_s =.15, p< .0001).

Another topic covered within the context of the home environment was rules or regularity with regard to children's bedtime. There were overall significant differences between pre-school groups (χ^2 = 16.9, df = 3, p< .0001). The relationship with type of pre-school centre used was similar to the previous result with the private day nursery group being slightly more likely to have such a rule, reflecting the socio-economic status differences between the pre-school centre groups.

TABLE 4.7: RULES RELATING TO BEDTIME AND TYPE OF PRE-SCHOOL CENTRE.

Regular Bedtime	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
Yes	495	*84.6*	506	*83.8*	460	*90.0*	338	*80.7*	**1799**	***84.9***
No	90	*15.4*	98	*16.2*	51	*10.0*	81	*19.3*	**320**	***15.1***
Total	**585**	***100***	**604**	***100***	**511**	***100***	**419**	***100***	**2119**	***100***

The relationship with socio-economic status is revealed in the next table.

TABLE 4.8: RULES RELATING TO BEDTIME AND SOCIO-ECONOMIC STATUS OF THE FAMILY.

Regular Bedtime	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
Yes	671	*91.4*	491	*85.2*	126	*77.8*	135	*75.4*	370	*80.1*	**1793**	***84.9***
No	63	*8.6*	85	*14.8*	36	*22.2*	44	*24.6*	92	*19.9*	**320**	***15.1***
Total	**734**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2113**	***100***

Again there is a clear socio-economic status gradient with higher socio-economic households being more likely to have rules or regularity with regard to children's bedtime ($r_s = .14$, $p< .0001$).

Summary of children's activities in the home

The data on children's activities in the home reveal differences related to the socio-economic status of the families. The differences between the children in the four pre-school groups reflect to some extent the socio-economic differences of their families. The children in the private day nursery group which has the highest socio-economic profile, engage in more educational activities, watch TV less often and are more likely to have rules concerning TV and bed time. However, while the families using LA centres have the lowest socio-economic profile, and show a lower level of educational activities and rules regarding bedtime. In other areas i.e. TV watching, and rules regarding TV, the LA centre families are not particularly different than for the families using nursery classes and playgroups.

PRE-SCHOOL PROVISION AND CHILDCARE HISTORY.

This section deals with the use of the target pre-school centre and the childcare history of the child before the start of the study.

The target pre-school centre

The centre that children were currently attending and from which they had been recruited to the study was regarded as the target centre for a child. Children attended their pre-school centre between 2 and 10 sessions a week and the variation across type of pre-school centre was considerable as shown in table 5.1.

TABLE 5.1: SESSIONS ATTENDED AND TYPE OF PRE-SCHOOL CENTRE.

Sessions	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
2	0	*0*	139	*22.8*	68	*13.2*	1	*0.2*	208	*9.7*
3	0	*0*	173	*28.4*	76	*14.8*	30	*6.9*	279	*13.0*
4	1	*0.2*	106	*17.4*	105	*20.4*	40	*9.2*	252	*11.8*
5	486	*82.8*	173	*28.4*	92	*17.9*	40	*9.2*	252	*11.8*
6	0	*0*	1	*0.2*	46	*8.9*	42	*9.7*	89	*4.2*
7	1	*0.2*	1	*0.2*	5	*1.0*	0	*0*	7	*0.3*
8	0	*0*	0	*0*	26	*5.1*	18	*4.2*	44	*2.1*
9	0	*0*	11	*1.8*	3	*0.6*	0	*0*	14	*0.6*
10	99	*16.9*	5	*0.8*	93	*18.1*	262	*60.5*	459	*21.4*
Total	587	*100*	609	*100*	514	*100*	433	*100*	2143	*100*

There were significant differences between pre-school groups (Kruskal-Wallis,χ^2 = 79.7, df = 3, p< .0001). The children at playgroup had the lowest levels of attendance, while the LA centre children had by far the highest level of attendance. The great majority (82.8%) of nursery class children attended half time, with almost all the remainder attending full-time. The patterns of attendance within the other types of pre-school centre were more diverse. The majority of playgroup children attended for less thanhalf-time, and only 3% of playgroup children attend for more than half-time. To some extent these differences in attendance reflect the demands of parents for particular amounts of provision. However, they also reflect restrictions upon sessions available. This latter point particularly applies to nursery classes and playgroups that are often only open half-time and, in the case of rural playgroups, often open for less than half-time.

TABLE 5.2: SESSIONS ATTENDED AND SOCIO-ECONOMIC STATUS.

Sessions	***Socio-economic status of family***										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
2	72	*9.8*	65	*11.3*	26	*16.0*	17	*9.5*	26	*5.6*	**206**	***9.8***
3	111	*15.1*	81	*14.1*	19	*11.7*	25	*14.0*	41	*8.9*	**277**	***13.1***
4	94	*12.8*	70	*12.2*	17	*10.5*	12	*6.7*	56	*12.1*	**249**	***11.8***
5	248	*33.8*	216	*37.6*	71	*43.8*	74	*41.3*	169	*36.6*	**778**	***36.9***
6	44	*6.0*	17	*3.0*	2	*1.2*	6	*3.4*	20	*4.3*	**89**	***4.2***
7	3	0.4	3	0.5	0	0	0	0	0	0	**6**	***0.3***
8	25	3.4	9	1.6	2	1.2	0	0	7	1.5	**43**	***2.0***
9	4	0.5	4	0.7	1	0.6	0	0	5	1.1	**14**	***0.6***
10	132	18.0	110	19.1	24	14.8	45	25.1	138	29.9	**449**	***21.3***
Total	**733**	**100**	**575**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2111**	***100***

The lowest socio-economic groups, semi and unskilled and unemployed/student are the most likely to attend for the maximum number of sessions per week (10) ($r_s = .09$, $p < .001$). This reflects the substantial use of LA centres for these groups, LA centres having the highest level of full-time attendance.

Age of starting target pre-school centre

The age at which children first started at the target pre-school centre varied with type of pre-school centre and with socio-economic status as follows.

TABLE 5.3: AGE OF STARTING CENTRE AND TYPE OF PRE-SCHOOL CENTRE.

	Type of pre-school centre								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Age started centre in months	43.8	*3.9*	34.0	*3.8*	25.4	*12.1*	26.1	*11.9*	33.1	*11.3*

The children in the private day nurseries and LA centres were likely to start younger, and, on average, shortly after 2 years of age. The children in the playgroups started, on average, around 2 years 10 months, and the children in the nursery class did not start until around 3 years 8 months on average. This has obvious implications for the duration of their pre-school experience in their current pre-school centre.

TABLE 5.4: AGE STARTED CENTRE AND SOCIO-ECONOMIC STATUS.

	Socio-economic status of family										Total	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	Mean	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***
Age started centre in months	30.3	*12.8*	33.0	*11.5*	36.5	*8.8*	36.1	*9.4*	35.4	*8.7*	**33.1**	***11.3***

The younger age of starting for the two higher socio-economic groups reflects their greater presence in private day nurseries where children start younger.

Reasons for attending the target centre

Parents were asked for their reasons for choosing the particular pre-school centre that their child was currently attending. For the total sample the most common reason given was the nearness to home (39.3%), followed by the reputation of the centre (30.6%) and whether a sibling attends (29.4%). Less often mentioned was the atmosphere of the centre (16.8%) and, surprisingly, educational activities were little mentioned (5.9%). The reasons of cost (2.4%), part-time vs. full-time provision (2.5%) and care available from an early age (0.8%) were very rarely mentioned and are left out of the following tables. Other diverse reasons were mentioned by 4.8% of parents.

These reasons are displayed by type of pre-school centre here.

TABLE 5.5: REASONS FOR CHOICE OF CENTRE VARIED BY TYPE OF PRE-SCHOOL CENTRE.

Reason for choice of centre	Type of pre-school centre				***Total***
	Nursery Class	Playgroup	Private DN	LA centre	
	%	%	%	%	%
Near home	*47.9*	*37.9*	*33.5*	*36.4*	***39.3***
Reputation	*19.5*	*33.8*	*36.4*	*34.3*	***30.6***
Sibling attends	*41.5*	*33.6*	*17.6*	*21.0*	***29.4***
Atmosphere	*9.9*	*12.9*	*32.1*	*13.3*	***16.8***
Educational activities	*5.6*	*3.8*	*11.4*	*2.9*	***5.9***
Other	*12.3*	*14.2*	*15.4*	*18.3*	***14.8***

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There were significant differences between pre-school groups mentioned. Being near to home and sibling attending were reasons mentioned more often by the nursery class group than by the other groups. The parents in the nursery class group were less likely to mention the reputation or atmosphere of the centre as a reason for choice. The playgroup parents also mentioned a sibling's attendance more often as a reason for choice, but were less likely to mention atmosphere or educational activities as a reason. The parents in the private day nursery group did not mention a sibling's attendance as often as other parents but were twice as likely to mention atmosphere and educational activities as the rest of the sample. The parents in the LA centre group were least likely to mention educational activities but otherwise followed the general pattern of the total sample.

Here the differences related to socio-economic status are considered.

TABLE 5.6: REASON FOR CHOICE OF CENTRE VARIED BY SOCIO-ECONOMIC STATUS OF FAMILY.

Reason for choice of centre	***Socio-economic status of family***					***Total***
	Professional/ Intermediate	Skilled Non-manual	Skilled Manual	Semi- or Unskilled	Unemployed/ Student	
	%	%	%	%	%	%
Near home	*37.2*	*39.4*	*45.1*	*48.0*	*36.4*	***39.1***
Reputation	*34.2*	*30.6*	*29.0*	*23.5*	*27.9*	***30.5***
Sibling attends	*26.0*	*30.6*	*30.9*	*27.9*	*33.1*	***29.3***
Atmosphere	*26.7*	*16.5*	*9.3*	*6.7*	*8.4*	***16.9***
Educational activities	10.1	4.0	6.8	1.7	3.2	***6.0***
Other	14.7	15.5	13.0	15.6	14.5	***14.8***

Socio-economic groups did show significant differences in reasons given for choice of centre. The most striking difference related to socio-economic status is that atmosphere and educational activities show a clear socio-economic status gradient, being most often mentioned the higher the socio-economic status group. The other reasons do not show marked socio-economic status variation. However, the skilled manual and semi-skilled/unskilled groups appear to be more concerned with the pre-school centre being near to home. This may reflect differences in travel to work patterns.

Parental visits to the pre-school centre

Parents were asked whether they had visited the centre in the last month other than to drop off or pick up their child. Table 5.7 shows how such visits varied with type of pre-school centre.

TABLE 5.7: PARENTAL VISITS TO CENTRE VARIED WITH TYPE OF PRE-SCHOOL CENTRE.

Parental Visits to Centre	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
Yes	164	*28.0*	242	*40.1*	148	*29.0*	129	*30.9*	**683**	***32.3***
No	421	*72.0*	362	*59.9*	362	*71.0*	288	*69.1*	**1433**	***67.7***
Total	**585**	***100***	**604**	***100***	**510**	***100***	**417**	***100***	2116	*100*

There were overall pre-school group differences ($\chi^2 = 24.4$, df = 3, $p < .0001$). Parents are more likely to visit playgroups than any other type of centre. The other three types of centre show similar levels of parental visits other than to drop off and pick up children.

TABLE 5.8: PARENTAL VISITS VARIED WITH SOCIO-ECONOMIC STATUS.

	Socio-economic status of family										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
Yes	262	*35.7*	182	*31.6*	56	*34.6*	48	*26.8*	133	*28.8*	**681**	***32.2***
No	472	*64.3*	394	*68.4*	106	*65.4*	131	*73.2*	329	*71.2*	**1432**	***67.8***
Total	**734**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2113**	***100***

The differences between socio-economic groups were small but significant ($\chi^2 = 9.5$,df = 4, $p < .05$). The lower socio-economic groups tend to be less likely to visit centres than in the professional/intermediate or skilled socio-economic groups.

Parents were also asked the reasons for their visits to the centre. Specifically they were asked whether the visits had involved:

1. time with the children
2. fundraising activities
3. maintaining the physical setting of the pre-school centre.
4. Meetings with staff and/or others.
5. Policy discussions.
6. The parent being employed at the centre.

The applicability of these reasons for parents using different types of pre-school centre is shown in the following table.

TABLE 5.9: REASONS FOR VISITING THE CENTRE IN RELATION TO TYPE OF PRE-SCHOOL CENTRE.

Reasons for visit	*Type of pre-school centre*				*Total*
	Nursery Class	Playgroup	Private DN	LA centre	
	%	%	%	%	%
Time with children	*18.1*	*27.3*	*5.7*	*6.2*	***15.4***
Fundraising	*5.1*	*10.1*	*5.3*	*7.4*	***7.0***
Maintenance	*0.3*	*4.3*	*1.0*	*1.2*	***1.8***
Meetings	*10.6*	*10.3*	*14.7*	*19.3*	***13.2***
Policy	*0.5*	*2.2*	*1.6*	*1.4*	***1.4***
Employment	*0.2*	*0.2*	*2.7*	*0.3*	***0.9***

Reasons for visiting a centre showed significant pre-school group differences. It is clear that parents are more likely to visit playgroups to spend time with children than other centre, being about five times more likely to express this reason than parents using a private day nursery or LA centre are. Parents of children in a nursery class are about three times as likely to express this reason as parents using a private day nursery or LA centre are. Parents using playgroups are also more likely to visit centres for reasons connected with fundraising, maintaining the building, and policy discussions. Parents using LA centres are more likely to visit a centre for a meeting with staff than for any other reason and are more likely to express this reason than parents using other types of centre. Very few parents in this study are employed in the centres their children attend, but this most often happens in private day nurseries (2.7%).

The applicability of these reasons for parents from different socio-economic groups is shown here.

TABLE 5.10: REASONS FOR VISITING CENTRE IN RELATION TO SOCIO-ECONOMIC STATUS OF FAMILY.

Reason for visit	*Socio-economic status of family*					*Total*
	Professional/ Intermediate	Skilled Non-manual	Skilled Manual	Semi- or Unskilled	Unemployed/ Student	
	%	%	%	%	%	%
Time with children	*15.0*	*16.8*	*17.9*	*14.5*	*13.6*	***15.4***
Fundraising	*7.8*	*6.4*	*7.4*	*6.7*	*6.3*	***7.0***
Maintenance	*1.4*	*2.1*	*1.2*	*2.2*	*2.2*	***1.8***
Meetings	*16.9*	*10.1*	*13.0*	*8.4*	*13.2*	***13.2***
Policy	*2.3*	*0.9*	*0*	*2.2*	*0.9*	***1.4***
Employment	1.0	1.2	1.4	0.6	0	***0.9***

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The socio-economic groups are similar in terms of visiting a centre to spend time with children, fundraising and maintenance of buildings. The reasons of meetings with staff and policy discussions are more likely to apply to parents from the higher socio-economic groups, particularly the professional/intermediate parents. These latter differences were statistically significant (p< .0001).

Overall the most common reason was to spend time with children (5.4%), followed by attendance at meetings (13.2%), and then fundraising activities (7%). The other reasons were all referred to by less than 2% of parents.

Childcare History

Parents were asked about their use of childcare from the child's birth. For each childcare arrangement, the child's age at the start and end of the period of childcare, and the number of hours per week were recorded. From this record the child's experience of childcare was established in terms of:
Total amount of relative care.
Total amount of other individual care
Total amount of group care
Total care besides attending target centre
Amount of care in target centre before entering the study
Total amount of care including target centre before entering study

These data are rather course measures of previous childcare as they ignore patterns of use, timing of starting and stopping, and otheraspects which would merit further study.

At the time of entering the study, some children would have had considerable experience of the target pre-school centre (i.e. their current centre), while others would have recently started at the target centre. To allow for this, the calculations for childcare experience were done both including the time at the target centre and excluding this time.

For 37 children in the study, there had been varying degrees of foster care, where the child was cared for 24 hours a day by a non-parent. This aspect of childcare was qualitatively different from the other forms of childcare, and therefore the childcare figures were calculated to remove foster care.

Type of pre-school centre

The childcare data were analysed in relation to the children's current pre-school centre (target centre). This breakdown is shown below.

TABLE 5.11: PRE-TARGET CHILDCARE (No. OF HOURS IN CHILD'S LIFE) AND TYPE OF PRE-SCHOOL CENTRE.

Pre study childcare	**Type of pre-school centre**								***Total***	
	Nursery Class		Playgroup		Private DN		LA centre			
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Relative	472	*1242*	403	*1034*	293	*842*	297	*1100*	**375**	***1070***
Individual	455	*1356*	273	*881*	782	*1614*	360	*1051*	**463**	***1268***
Group	250	*569*	84	*399*	202	*712*	187	*564*	**179**	***569***
Total Care	1178	*1838*	761	*1409*	1278	*1856*	845	*1558*	**1017**	***1689***
Total Care + target	1261	*1835*	918	*1405*	2595	*2079*	2295	*2065*	**1690**	***1965***
Total N	***584***		***604***		***511***		***420***		***2119***	

The differences between the pre-school groups in the use of relativecare(e.g. grandmother, aunt) are statistically significant (ANOVA, F(3,2115) = 3.5, p< .05) but not dramatic and post-hoc paired comparisons (Scheffé test) do not reveal any particular pairs to be significantly different. However, the differences in the use of individual non-relative care (e.g. childminder, nanny) are more substantial. The overall differences are statistically significant (ANOVA,F(3,2115) = 16.6, p< .0001) and Scheffé post-hoc paired comparisons reveal that the private day nursery group has significantly greater use of such childcare than any other group. The nursery class, playgroup and LA centre group are not significantly different. The use of group care (e.g. crèche, nursery) show significant differences overall (ANOVA, F(3,2115) = 9.1, p< .0001). Scheffé post-hoc comparisons reveal that the play group children have received significantly less group care than all the other children in the study. Considering all childcare other than the target centre, there are significant pre-school group differences overall (ANOVA, F (3,2115) = 12.0, p< .0001). Scheffé post-hoc comparisons reveal that the pattern in the private day nursery and nursery class children have significantly more childcare than the playgroup and LA centre children. Finally, when the total childcare including the target centre (pre-study) is considered, there again are significant overall differences (ANOVA, F (3,2115) = 104.2, p< .0001). Scheffé post-hoc comparisons reveal that the LA centre and private day nursery children receive more total childcare than the nursery class and playgroup centre children.

The total non-parental childcare (including target centre) received by the children in the private day nursery and LA centres is over twice that received by the nursery class children and three times that received by the playgroup children. While the overall levels for pre-target centre care are similar, it should be considered that the private day nursery and LA centre children typically start at their target centres at younger ages. Hence the pre-target childcare is compressed into a shorter span of time.

The childcare history data were then considered in relation to socio-economic status of the family

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TABLE 5.12: PRE-TARGET CHILDCARE (No. OF HOURS) AND SOCIO-ECONOMIC STATUS.

	Socio-economic status of family										***Total***	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Relative	319	*905*	472	*1130*	437	*1146*	408	*1079*	258	*1050*	**364**	***1038***
Individual	854	*1672*	407	*1197*	249	*847*	87	*403*	132	*629*	**463**	***1268***
Group	225	*629*	179	*601*	80	*178*	231	*800*	122	*372*	**179**	***569***
Total care	1399	*1897*	1059	*1643*	767	*1470*	725	*1349*	512	*1285*	**1006**	***1668***
Total care + Target	2322	*2096*	1761	*1999*	1158	*1773*	1143	*1590*	956	*1406*	**1682**	***1950***
Total	**734**		**575**		**162**		**179**		**462**		*2112*	

The total non-parental childcare received by children is greater for the highest socio-economic groups (ANOVA, F(4,2107)=45.8, p<.0001), and lowest for the children in the unemployed/student groups. It can be seen that the children in the professional/intermediate group receive three times as much non-parental childcare as the children in the unemployed/student group (Scheffé post hoc comparisons).

When considering childcare (pre-target centre) the differences are less marked but highest socio-economic groups are still the highest, particularly the professional/intermediate and skilled non-manual groups (ANOVA, F(4,2107)=23.5, p<.0001). These are also the socio-economic groups that show the highest level of maternal full-time employment (table 1.9, page 11). When the pre-target childcare is broken down by type of care, the highest socio-economic groups show higher use of individual (non-relative) childcare than the other groups. The professional/intermediate and unemployed/student groups least use relative care (ANOVA, F(4,2107)= 3.4, p<.01).

The variation in amount of childcare experienced by the children within any category, be it type of pre-school centre or socio-economic, is very large. This variation is indicated by the large standard deviation (SD) in each cell of the tables. Probably this fact is as important as the overall differences between pre-school and socio-economic groups. This fact indicates that the differences within groups are as great and possibly larger than the differences between groups. This provides the opportunity for the study to consider childcare history variables as a variable within the pre-school groups, with possibly different effects within different pre-school or socio-economic groups.

Total of non-parental caregivers

From the childcare histories, it was possible to extract the number of separate non-parental care giving arrangements experienced by the child since birth.

TABLE 5.13: TOTAL OF NON-PARENTAL CAREGIVERS AND TYPE OF PRE-SCHOOL CENTRE.

Total of non-parental caregivers	*Type of pre-school centre*								*Total*	
	Nursery Class		Playgroup		Private DN		LA centre			
	N	%	N	%	N	%	N	%	N	%
0	161	*27.5*	285	*47.2*	154	*30.1*	191	*45.5*	**791**	***37.3***
1	214	*36.6*	192	*31.8*	184	*36.0*	152	*36.2*	**742**	***35.0***
2	110	*18.8*	94	*15.6*	104	*20.4*	61	*14.5*	**369**	***17.4***
3	63	*40.8*	23	*3.8*	42	*8.2*	12	*2.9*	**140**	***6.6***
4 +	37	*6.3*	10	*1.7*	27	*4.3*	4	*1.0*	**78**	***3.7***
Total	**585**	***100***	**604**	***100***	**511**	***100***	**420**	***100***	**2120**	***100***

The children in the nursery class group have experienced a larger number of non-parental caregivers and this probably reflects their later starting age, i.e. more time has passed where they could have had non-parental care.

TABLE 5.14: TOTAL OF NON-PARENTAL CAREGIVERS AND SOCIO-ECONOMIC STATUS.

Total of non-parental caregivers	*Socio-economic status of family*										*Total*	
	Professional/ Intermediate		Skilled Non-manual		Skilled Manual		Semi- or Unskilled		Unemployed/ Student			
	N	%	N	%	N	%	N	%	N	%	N	%
0	190	*25.9*	193	*33.5*	74	*45.7*	81	*45.3*	251	*54.3*	**789**	***37.3***
1	255	*34.7*	225	*39.1*	48	*29.6*	65	*36.3*	145	*31.4*	**738**	***37.3***
2	167	*22.8*	96	*16.7*	31	*19.1*	27	*15.1*	48	*10.4*	**369**	***17.5***
3	67	*22.8*	96	*16.7*	31	*19.1*	27	*15.1*	14	*3.0*	**140**	***6.6***
4 +	55	*7.4*	15	*2.6*	0	*0*	3	*1.7*	4	*0.8*	**77**	***3.7***
Total	**734**	**100**	**576**	**100**	**162**	**100**	**179**	**100**	**462**	**100**	**2113**	***100***

There is a trend across the socio-economic groups for lower socio-economic groups to have had a smaller number of non-parental caregivers before starting at their current pre-school centre. This appears to be related to neither starting age, in that number of non-parental caregivers and starting age were uncorrelated, nor the type of care used.

SUMMARY

In the EPPE study, parental interviews yielded considerable information about the parents, families and children who are part of the study. Using this data, firstly the socio-economic characteristics of the sample were derived from information on parental occupations. The socio-economic differences for the groups using different types of pre-school centre were then described. Parental characteristics of level of employment, marital status, parental age and qualifications all varied with socio-economic classification and the variation by type of pre-school centre reflected this variation. Maternal level of paid employment was also linked to type of pre-school centre and amount of previous childcare used. Family types, ethnicity and language use within the sample were described and again these varied by socio-economic classification and this was reflected in the distribution by type of pre-school centre.

When the child's health, development and behaviour was considered, to a large extent, a similar pattern emerged of type of pre-school differences following the pattern of socio-economic differences. However, for the child's health, development and behaviour an exception to this pattern was the lower level of problems reported for the nursery class group which would not have been expected from their socio-economic status. Recent health and potentially disruptive life events for children appeared to be related neither to social class nor type of pre-school centre.

Children's activities in the home were considered in terms of educational activities, TV and video watching, and rules concerning TV and bedtime. Educational activities revealed a clear socio-economic trend with differences related to type of pre-school reflecting these socio-economic differences in the pre-school groups. Rules regarding TV and bedtime, however, did not entirely follow this pattern.

In considering the use and involvement with the pre-school centres, there were some relationships with socio-economic differences. For example, parents from higher socio-economic groups were more likely to visit centres and more likely to be attending meetings with staff and to be involved in policy discussions. Parents from higher socio-economic groups were also more likely to be concerned with the atmosphere and educational activities in their choice of pre-school centre. However, there were a number of differences which were related to type of pre-school centre rather than deriving from parental socio-economic differences. These included:

- the age of starting which was lower for both private day nurseries and LA centres.
- the number of sessions attended which showed a different pattern for each type of pre-school centre.
- the relationship between maternal level of paid employment was linked to pre-school centre use for private day nurseries and LA centres but not for nursery classes or playgroups.
- also visits to centres were more likely in playgroups than other types of centre and for playgroups, spending time with children and fundraising activities were also more common than for the other types of pre-school centre.

The childcare histories of the children revealed enormous diversity across the whole sample and for children within each type of pre-school centre. Overall the children using private day nurseries and LA centres had more than twice as much time non-parental care as the children in the nursery classes and playgroups. This difference was largely accounted for by their time spent in their current pre-school centre where they had started earlier and were attending for more sessions and hours per week. There was also a strong association between level of maternal paid employment and previous childcare use. Those mothers who were employed for longer hours had a history of using greater amounts of childcare. The socio-economic differences in childcare histories largely reflect the differential use of types of pre-school centre and differential levels of maternal paid employment by the different socio-economic groups, see Technical Paper 2, Characteristics of the EPPE Project : sample at entry to the study. (Sammons et al, 1999).

This range of differences within the sample will need to be considered in dealing with children's progress through pre-school and into primary school. Some of these factors may be related to developmental outcomes and later stages of the study can investigate this possibility and where necessary allow for such factors in evaluating the contribution of pre-school and other factors to developmental progress.

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The Effective Provision of Pre-School Education (EPPE) Project

Technical Paper 6

Characteristics of the Centres in the EPPE Sample: Observational Profiles

A Longitudinal Study funded by the DfEE
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226

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Technical Paper 6
CHARACTERISTICS OF THE CENTRES IN THE EPPE SAMPLE: OBSERVATIONAL PROFILES

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Contents

Page Number

Overview of the Project 1-11
Executive Summary i

Assessing Pre-School Environments 1

Methods 2

Rating Scales: the Early Childhood Environment Rating Scale (ECERS-R) and the English Extension (ECERS-E) 2
Procedure 2
Inter-observer reliability 5
Sample of regions and centres 6
Summary of the different types of provision 7

Results 7

Distribution of the scores and an overview of the sub-scales 8
A descriptive profile of the two settings: playgroups and nursery classes 10
A comparison of pre-school environments according to type of provision 11
The focus on curriculum in ECERS-E 16
Focus on combined centres 20
Variation within types of provision 21
The Relationship between ECERS-R and ECERS-E 23
ECERS- R and ECERS-E factor analysis 23
  Global dimensions of quality 23
  Comparison between types of provision on the two dimensions 27

Discussion 28

Relating this study to previous research 28
Profiles found in difference types of provision 29
Appropriateness of ECERS-R and ECERS-E 29

References 31

Appendices 33

Effective Provision of Pre-school Education

"EPPE"

Overview of the Project

This series of 12 reports describes the research on effective pre-school provision funded by the UK Department for Education & Employment (DfEE). Further details appear in Technical Paper 1 (Sylva, Sammons, Melhuish, Siraj-Blatchford & Taggart 1999). This longitudinal study assesses the attainment and development of children followed longitudinally between the ages of 3 and 7 years. Three thousand children were recruited to the study over the period January 1997 to April 1999 from 141 pre-school centres. Initially 114 centres from four types of provision were selected for the study but in September 1998 an extension to the main study was implemented to include innovative forms of provision, including 'combined education and care' (Siraj-Blatchford et al. 1997).

Both qualitative and quantitative methods (including multilevelmodelling) have been used to explore the effects of individual pre-school centres on children's attainment and social/behavioural development at entry to school and any continuing effects on such outcomes at the end of Key Stage 1 (age 7). In addition to centre effects, the study investigates the contribution to children's development of individual and family characteristics such as gender, ethnicity, language, parental education and employment. This overview describes the research design and discusses a variety of research issues (methodological and practical) in investigating the impact of pre-school provision on children's developmental progress. A parallel study is being carried out in Northern Ireland.

There have been many initiatives intended to improve educational outcomes for young children. Will these initiatives work? Will they enable children to enter school 'more ready' to learn, or achieve more at the end of Key Stage 1? Which are the most effective ways to educate young children? The research project described in this paper is part of the new emphasis on ensuring 'a good start' for children.

PREVIOUS RESEARCH ON THE EFFECTS OF EARLY EDUCATION IN THE UK

There has been little large-scale, systematic research on the effects of early childhood education in the UK. The 'Start Right' Enquiry (Ball 1994; Sylva 1994) reviewed the evidence of British research and concluded that small-scale studies suggested a positive impact but that large-scale research was inconclusive. The Start Right enquiry recommended more rigorous longitudinal studies with baseline measures so that the 'value added' to children's development by pre-school education could be established.

Research evidence elsewhere on the effects of different kinds of pre-school environment on children's development (Melhuish et al. 1990; Melhuish 1993; Sylva & Wiltshire 1993; Schweinhart & Weikart 1997; Borge & Melhuish, 1995; National Institute of Child Health Development 1997) suggests positive outcomes. Some researchers have examined the impact of particular characteristics, e.g. gender and attendance on children's adjustment to nursery classes (Davies &Brember 1992), or adopted cross-sectional designs to explore the impact of different types of pre-school provision (Davies &Brember 1997). Feinstein, Robertson & Symons (1998) attempted to evaluate the effects of pre-schooling on children's subsequent progress but birth cohort designs may not be appropriate for the study of the influence of pre-school education. The absence of data about children's attainments at entry to pre-school means that neither the British Cohort Study (1970) nor the National Child Development Study (1958) can be used to explore the effects of pre-school education on children's progress. These studies are also limited by the time lapse and many changes in the nature of pre-school provision which have

occurred. To date no research using multilevel models (Goldstein 1987) has been used to investigate the impact of both type of provision **and** individual centre effects. Thus little research in the UK has explored whether some forms of provision have greater benefits than others. Schagen (1994) attempted multilevel modelling but did not have adequate control at entry to pre-school.

In the UK there is a long tradition of variation in pre-school provision both between types (e.g. playgroup, local authority or private nursery or nursery classes) and in different parts of the country reflecting Local Authority funding and geographical conditions (i.e. urban/rural and local access to centres). A series of reports (House of Commons Select Committee 1989; DES Rumbold Report 1990; Ball 1994) have questioned whether Britain's pre-school education is as effective as it might be and have urged better co-ordination of services and research into the impact of different forms of provision (Siraj-Blatchford 1995). The EPPE project is thus the first large-scale British study on the effects of different kinds of pre-school provision and the impact of attendance at individual centres.

OVERVIEW OF RESEARCH METHODS

The EPPE project is a major study instituted in 1996 to investigate three issues which have important implications for policy and practice:

- the effects on children of different types of pre-school provision,
- the 'structural' (e.g. adult-child ratios) and 'process' characteristics (e.g. interaction styles) of more effective pre-school centres, and
- the interaction between child and family characteristics and the kind of pre-school provision a child experiences.

An educational effectiveness research design was chosen to investigate these topics because this enabled the research team to investigate the progress and development of individual children (including the impact of personal, socio-economic and family characteristics), and the effect of individual pre-school centres on children's outcomes at both entry to school (the start of Reception which children can enter between the ages of 4 and 5 plus) and at the end of Key Stage 1 (age 7 plus). Such research designs are well suited to social and educational research with an institutional focus (Paterson & Goldstein 1991). The growing field of school effectiveness research has developed an appropriate methodology for the separation of intake and school influences on children's progress using so called 'value added' multilevel models (Goldstein 1987, 1995). As yet, however, such techniques have not been applied to the pre-school sector, although recent examples of value added research for younger ages at the primary level have been provided by Tymms et al. 1997; Sammons & Smees 1998; Jesson et al. 1997; Strand 1997; and Yang & Goldstein 1997. These have examined the relationship between baseline assessment at reception to infant school through to Key Stage 1 (age 7 plus years).

School effectiveness research during the 1970s and 1980s addressed the question "*Does the particular school attended by a child make a difference?*" (Mortimore et al. 1988; Tizard et al. 1988). More recently the question of internal variations in effectiveness, teacher/class level variations and stability in effects of particular schools over time have assumed importance (e.g. Luyten 1994; 1995; Hill & Rowe 1996; Sammons 1996). This is the first research to examine the impact of individual pre-school centres using multilevel approaches. The EPPE project is designed to examine both the impact of type of pre-school provision as well as allow the identification of particular pre-school characteristics which have longer term effects. It is also designed to establish whether there are differences in the effects of individual pre-school centres on children's progress and development. In addition, the project explores the impact of pre-school provision for different groups of children and the extent to which pre-schools are effective in promoting different kinds of outcomes (cognitive and social/behavioural).

The 8 aims of the EPPE Project

- To produce a detailed description of the 'career paths' of a large sample of children and their families between entry into pre-school education and completion (or near completion) of Key Stage 1.
- To compare and contrast the developmental progress of 3,000+ children from a wide range of social and cultural backgrounds who have differing pre-school experiences including early entry to Reception from home.
- To separate out the effects of pre-school experience from the effects of education in the period between Reception and Year 2.
- To establish whether some pre-school centres are more effective than others in promoting children's cognitive and social/emotional development during the pre-school years (ages 3-5) and across Key Stage 1 (5-7 years).
- To discover the individual characteristics (structural and process) of pre-school education in those centres found to be most effective.
- To investigate differences in the progress of different groups of children, e.g. second language learners of English, children from disadvantaged backgrounds and both genders.
- To investigate the medium-term effects of pre-school education on educational performance at Key Stage 1 in a way which will allow the possibility of longitudinal follow-up at later ages to establish long-term effects, if any.
- To relate the use of pre-school provision to parental labour market participation.

The sample: regions, centres and children

In order to maximise the likelihood of identifying the effects of individualcentres and also the effects of various types of provision, the EPPE sample was stratified by type of centre and geographical location.

- Six English Local Authorities (LAs) in five regions were chosen strategically to participate in the research. These were selected to cover provision in urban, suburban and rural areas and a range of ethnic diversity and social disadvantage. (Another related project covering Northern Ireland was instituted in April 1998 [Melhuish et al. 1997]. This will enable comparison of findings across different geographical contexts.)
- Six main types of provision are included in the study (the most common forms of current provision; *playgroups*, local authority or voluntary *day nurseries*, *private day nurseries*, *nursery schools, nursery classes*, and centres *combining care and education*. Centres were selected randomly within each type of provision in each authority.

In order to enable comparison ofcentre and type of provision effects the project was designed to recruit 500 children, 20 in each of 20-25centres, from the six types of provision, thus giving a total sample of approximately 3000 children and 140 centres[1]. In some LAs certain forms of provision are less common and others more typical. Within each LA, centres of each type were selected by stratified random sampling and, due to the small size of somecentres in the project (e.g. rural playgroups), more of these centres were recruited than originally proposed, bringing the sample total to 141centres and over 3000 children.

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[1] The nursery school and combined centre samples were added in 1998 and their cohorts will be assessed somewhat later; results will be reported separately and in combined form.

Children and their families were selected randomly in eachcentre to participate in the EPPE Project. All parents gave written permission for their children to participate.

In order to examine the impact of no pre-school provision, it was proposed to recruit an additional sample of 500 children pre-school experience from the reception classes which EPPE children entered. However in the five regions selected a sample of only 200+ children was available for this 'home' category.

The progress and development of pre-school children in the EPPE sample is being followed over four years until the end of Key Stage 1. Details about length of sessions, number of sessions normally attended per week and child attendance have been collected to enable the amount of pre-school education experienced to be quantified for each child in the sample. Two complicating factors are that a substantial proportion of children have moved from one form of pre-school provision to another (e.g. from playgroup to nursery class) and some will attend more than onecentre in a week. Careful records are necessary in order to examine issues of stability and continuity, and to document the range of pre-school experiences to which individual children can be exposed.

Child assessments

Around the third birthday, or up to a year later if the child entered pre-school provision after three, each child was assessed by a researcher on four cognitive tasks: verbal comprehension, naming vocabulary, knowledge of similarities seen in pictures, and block building. A profile of the child's social and emotional adjustment was completed by the pre-school educator who knew the child best. If the child changed pre-school before school entry, he or she was assessed again. At school entry, a similar cognitive battery was administered along with knowledge of the alphabet and rhyme/alliteration. The Reception teacher completed the social emotional profile.

Further assessments were made at exit from Reception and at the end of Years 1 and 2. In addition to standardised tests of reading and mathematics, information on National Assessments will be collected along with attendance and special needs. At age 7, children will also be invited to report themselves on their attitudes to school.

Measuring child/family characteristics known to have an impact on children's development

1) Information on individual 'child factors' such as gender, language, health and birth order was collected at parent interview.

2) Family factors were investigated also. Parent interviews provided detailed information about parent education, occupation and employment history, family structure and attendance history. In addition, details about the child's day care history, parental attitudes and involvement in educational activities (e.g. reading to child, teaching nursery rhymes, television viewing etc) have been collected and analysed.

Pre-school Characteristics and Processes

Regional researchers liaised in each authority with a Regional Coordinator, a senior local authority officer with responsibility for Early Years who arranged 'introductions' tocentres and key staff. Regional researchers interviewed centre managers on: group size, child staff ratio, staff training, aims, policies, curriculum, parental involvement, etc.

'Process' characteristics such as the day-to-day functioning within settings (e.g. child-staff interaction, child-child interaction, and structuring of children's activities) were also studied. The Early Childhood Environment Rating Scale (ECERS) which has been recently adapted (Harms, Clifford &Cryer 1998) and the Caregiver Interaction Scale (Arnett 1989) were also administered. The ECERS includes the following sub-scales:

- Space and furnishings
- Personal care routines
- Language reasoning
- Activities
- Interaction
- Programme structure
- Parents and staffing

In order that the more educational aspects of English centres could be assessed, Sylva,Siraj-Blatchford, Taggart & Colman (unpublished) developed four additional ECERS sub-scales describing educational provision in terms of: Language, Mathematics, Science and the Environment, and Diversity.

Setting the centres in context

In addition to describing how each centre operated internally, qualitative interviews were conducted with centre managers to find out the links of each setting to local authority policy and training initiatives. Senior local authority officers from both Education and Social Services were also interviewed to find out how each local authority implemented Government early years policy, especially the Early Years Development Plans which were established to promote education and care partnerships across providers in each local authority.

Case Studies

In addition to the range of quantitative data collected about children, their families and their pre-school centres, detailed qualitative data will be collected using case studies of several "effective" pre-school centres (chosen retrospectively as 'more effective' on the basis of the multilevel analyses of intake and outcome measures covering the period baseline to entry into reception). This will add the fine-grained detail to how processes within centres articulate, establish and maintain good practice.

The methodology of the EPPE project is thus mixed. These detailed case studies will use a variety of methods of data gathering, including documentary analysis, interviews and observations and the results will help to illuminate the characteristics of more successful pre-school centres and assist in the generation of guidance on good practice. Particular attention will be paid to parent involvement, teaching and learning processes, child-adult interaction and social factors in learning. Inevitably there are difficulties associated with the retrospective study of process characteristics ofcentres identified as more or less effective after children in the EPPE sample have transferred to school and it will be important to examine field notes and pre-schoolcentre histories to establish the extent of change during the study period.

ANALYTIC STRATEGY

The EPPE research was designed to enable the linking of three sets of data: information about children's attainment and development (at different points in time), information about children's personal, social and family characteristics (e.g. age, gender, SES etc), and information about pre-school experience (type of centre and its characteristics).

Identifying individual centre effects and type of provision at entry to school

Longitudinal research is essential to enable the impact of child characteristics (personal, social and family) to be disentangled from any influence related to the particular pre-school centre attended. Multilevel models investigate the clustered nature of the child sample, children being nested within centres and centres within regions. The first phase of the analysis adopts these three levels in models which attempt to identify any centre effects at entry to reception class.

Given the disparate nature of children's pre-school experience it is vital to ensure that the influences of age at assessment, amount and length of pre-school experience and pre-school attendance record are accounted for when estimating the effects of pre-school education. This information is also important in its own right to provide a detailed description of the range of pre-school provision experienced by different children and any differences in the patterns of provision used by specific groups of children/parents and their relationship to parents' labour market participation. Predictor variables for attainment at entry to reception will include prior attainment (verbal and non-verbal sub scales), social/emotional profiles, and child characteristics (personal, social and family). The EPPE multilevel analyses will seek to incorporate adjustment for measurement error and to examine differences in the performance of different groups of children at entry to pre-school and again at entry to reception classes. The extent to which any differences increase/decrease over this period will be explored, enabling equity issues to be addressed.

After controlling for intake differences, the estimated impact of individual pre-school centres will be used to select approximately 12 'outlier' centres from the 141 in the project for detailed case studies (see 'Case Studies' above). In addition, multilevel models will be used to test out the relationship between particular process quality characteristics of centres and children's cognitive and social/behavioural outcomes at the end of the pre-school period (entry to school). The extent to which it is possible to explain (statistically) the variation in children's scores on the various measures assessed at entry to reception classes will provide evidence about whether particular forms of provision have greater benefits in promoting such outcomes by the end of the pre-school period. Multilevel analyses will test out the impact of measures of pre-school process characteristics, such as the scores on various ECERS scales and Pre-School Centre structural characteristics such as ratios. This will provide evidence as to which measures are associated with better cognitive and social/behavioural outcomes in children.

Identifying continuing effects of pre-school centres at KS1

Cross-classified multilevel models have been used to examine the long term effects of primary schools on later secondary performance (Goldstein & Sammons, 1997). In the EPPE research it is planned to use such models to explore the possible mid-term effects of pre-school provision on later progress and attainment at primary school at age 7. The use of cross classified methods explicitly acknowledges that children's educational experiences are complex and that over time different institutions may influence cognitive and social/behavioural development for better or worse. This will allow the relative strength of any continuing effects of individual pre-school centre attendance to be ascertained, in comparison with the primary school influence.

THE LINKED STUDY IN NORTHERN IRELAND 1998-2003

The Effective Pre-school Provision in Northern Ireland (EPPNI) is part of EPPE and is under the directorship of Professor Edward Melhuish, Professor Kathy Sylva, Dr. Pam Sammons, and Dr. Iram Siraj-Blatchford. The study explores the characteristics of different kinds of early years provision and examines children's development in pre-school, and influences on their later adjustment and progress at primary school up to age 7 years. It will help to identify the aspects of pre-school provision which have a positive impact on children's attainment, progress, and development, and so provide guidance on good practice. The research involves 70 pre-school centres randomly selected throughout Northern Ireland.

The study investigates all main types of pre-school provision attended by 3 to 4 year olds in Northern Ireland: playgroups, day nurseries, nursery classes, nursery schools and reception groups and classes. The data from England and Northern Ireland offer opportunities for potentially useful comparisons.

SUMMARY

This "educational effectiveness" design of the EPPE research study enables modelling of the complicated effects of amount and type of pre-school provision (including attendance) experienced by children and their personal, social and family characteristics on subsequent progress and development. Assessment of both cognitive and social/behavioural outcomes has been made. The use of multilevel models for the analysis enables the impact of both type of provision and individualcentres on children's pre-school outcomes (at age 5 and later at age 7) to be investigated. Moreover, the relationships between pre-school characteristics and children's development can be explored. The results of these analyses and the findings from the qualitative case studies of selectedcentres can inform both policy and practice. A series of 12 technical working papers will summarise the findings of the research.

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Characteristics of the Centres in the EPPE Sample: Observational Profiles

EXECUTIVE SUMMARY

The EPPE project investigates the characteristics of early childhood education and care through a variety of research methods; this paper reports on just two instruments. A 'centre profile' was created for each centre through systematic observation and questions to staff. The Early Childhood Environment Rating Scale: Revised (ECERS-R) was used in drawing up each centre's profile along with an extension to it based on the Desirable Learning Outcomes (ECERS-English Extension). The ECERS-R rating scale consisted of seven sub-scales which provide an overview of the pre-school environment, covering aspects of the setting from furnishings to individuality of care and the quality of social interactions (described more fully later). The ECERS-E describes the curriculum within the pre-school, including areas such as mathematics and literacy. Each sub-scale is comprised of a range of items describing 'quality' of the specific type of provision. Each item was rated 1 (inadequate) to 7 (excellent). The ECERS-R and ECERS-E are one approach to describing the 'processes' through which children are cared for and educated.

There are other important sources of information excluded here such as adult–child ratio, unit cost per child, and management of the centre. A fuller analysis of centres in the EPPE research will require the linking of the findings reported here with parent interview data, centre manager interview data and child outcome data when children enter reception class. This will occur in later papers in this series.

This paper describes the characteristics of the 141 centres attended by 3 and 4 year-old children in the EPPE sample. Averaged across all the centres, provision in the sample approached 'good' on the ECERS-R but the curricular profile developed for England (ECERS-E) showed that the learning opportunities in maths and science were limited and sometimes inadequate. However overall scores on ECERS indicate similar quality for much provision in England with that in other industrialised countries.

Considering type of provision, the LEA centres (nursery schools, nursery classes and nursery schools combined with care) had scores in the good-to-excellent range. Social services daycare were next, nearing the good range. However the playgroups and private day nurseries were consistently found to have scores in the 'minimal/adequate' range. These differences in quality are similar to recent Ofsted reports on variation in the quality of pre-school provision (Ofsted, 1999) and to a recent study using ECERS on 44 pre-school centres in London by Lera, Owen and Moss (1996).

This large sample of pre-school centres from different regions in England shows great variation in the curriculum and care on offer, the pedagogical strategies seen in interactions between children and staff, and in the resources available for children's play and learning. Comparisons between types suggest that a ratio of 1:8 as found in the private and voluntary sector do not guarantee high standards by themselves and that ratios of 1:13 in the LEA sector are not associated with low quality. However, the issue of ratio is inevitably confounded with type of preschool and other variation associated with type, e.g. qualifications of staff

Although centres offering full day care generally had lower ratings than those on a sessional basis, the LEA nursery schools which had changed from 'education only' to centres offering full day care and encouragement of parental involvement usually scored highest of all. Further it appeared that adding 'education' to more traditional local authority day care settings (usually one teacher or a peripatetic teacher) is not associated with higher quality. This implies that there is still some way to go before the ideal of combined education and care can be achieved and that the training of all staff is important.

ASSESSING PRE-SCHOOL ENVIRONMENTS

Researchers have been debating for years about the concept of 'quality' in early childhood education and care. Judgement of quality involves values and what is a 'high quality' centre to one parent may be quite low in the eyes of a local authority officer or indeed another parent. Munton, Mooney and Rowland's (1995) have suggested that there are six dimensions of quality: effectiveness, acceptability, efficiency, access, equity and relevance. The main thrust of the EPPE study (see technical paper 1) is on the 'effectiveness' aspect of quality as defined by Munton and his colleagues. Munton et al. (1995) further identified three basic dimensions in describing the early years setting. These are the **structure** which includes both facilities and human resources; the educational and care **processes** which children experience every day; and the **outcomes** or the longer term consequences of the education and care the child receives. The observational measures described in this technical paper focus on educational and care processes but also include some structure in their description of quality. That dimension of quality which relates to the **outcomes** for children will be addressed in later papers in the EPPE series.

One of the most widely used observational measures for describing the characteristics of early childhood education and care is the **Early Childhood Environment Rating Scale** (ECERS, now revised; Harms, Clifford & Cryer 1998). The revised ECERS-R has 43 items which are divided into 7 sub-scales. These sub-scales are space and furnishing, personal care routines, language and reasoning, activities, social interactions, organisation and routines, adults working together. Each item is rated on a 7 point scale (1 = inadequate, 3 = minimal/adequate, 5 = good, 7 = excellent). Completion of the ECERS usually involves approximately one day of observation, as well as talking to the staff about aspects of the routine which were not visible during the observation session (for example, weekly swimming or seasonal outings). The word 'environment' in the rating scale is taken in its broadest sense to include social interactions, pedagogical strategies and relationships between children as well as adults and children. Matters of pedagogy are very much to the fore in ECERS-R. For example the sub-scale Organisation and Routine has an item 'Schedule' which gives high ratings to a balance between adult-initiated and child-initiated activities. In order to score a 5 the centre must have 'a balance between structure and flexibility' but a 7 requires 'variations to be made in the schedule to meet individual needs, for example a child working intensively on a project should be allowed to continue past the scheduled time'. Further attention to pedagogy can be found in the item Free Play where to earn a 5 centres must have 'free play occurring for a substantial portion of the day/session both indoors and outdoors' Although entitled 'Environmental Rating Scale' the ECERS-R describes processes of the educational and care environment even more than the physical space and materials on offer.

Construct validity for the original ECERS has been demonstrated in previous studies through its agreement with professional judgements and predictive validity through the results of child outcome measures applied to the 'graduates' of higher or lower quality provision (see Appendix A). Discriminant validity has been based on the ability of the items to distinguish between classrooms of varying quality which were assessed by trainers/experts. Reliability has been established in many studies carried out elsewhere on the ECERS and in general Kappa inter-rater agreement varies between .75 and .95. A summary of research papers on reliability and validity of the ECERS appears in Appendix A and reliability within the EPPE research is reported in the Methods section.

In the EPPE study, the ECERS-R was supplemented by a new rating scale (ECERS-Extension, Sylva, Siraj-Blatchford, Taggart and Colman, 1998), devised by the EPPE team based on the Desirable Learning Outcomes for 3 and 4 year-olds and pedagogical practices associated with it (Siraj-Blatchford and Wong, 1999). Both the ECERS-R and ECERS-E are based on a conceptual framework which takes account of pedagogical processes and curriculum.

As the ECERS was developed in the United States of America and intended for use in both care and educational settings, the EPPE team thought it necessary to devise a second early childhood environment rating scale which was focused on provision in Britain as well as good practice in catering for diversity (Sylva et al., 1998). The ECERS-E was devised after wide consultation with experts and piloted extensively. The ECERS-E consists of 4 sub-scales: literacy, mathematics, science and environment, and diversity. Both the ECERS-R and the ECERS-E will be described as they were applied in 141 pre-school settings across five regions in England.

Both ECERS ratings were carried out by a senior research officer responsible for the region. The research officers had, in every instance, experience of assessing children for at least 6 months in the centre before carrying out the ECERS observation and ratings. Moreover, each observer put aside a full day to complete the ECERS. This was necessary because the two rating scales contained very detailed information about curricular provision, pedagogy, planning, resources and relationships.

METHODS

Rating Scales: the Early Childhood Environment Rating Scale (ECERS-R) and the English Extension (ECERS-E)

Each pre-school centre was assessed using the ECERS-R and its extension. The ECERS-R consists of 7 sub-scales; each sub-scale is composed of 4-10 individual items which describe the 'quality' of provision along a continuum centred on materials, facilities, pedagogy or social interactions. The ECERS-R sub-scales are listed below with their titles and items. In this study the wording of the ECERS-R was adjusted very slightly to conform to current language use in the U.K.. Minor changes to the sub-scale titles were made and these appear in brackets:

Space and furnishings – items 1-8
Personal care routines (Personal care practices) – items 9-14
Language and reasoning – items 15-18
Activities (Pre-school activities) – items 19-28
Interaction (Social interaction) – items 29-33
Programme structure (Organisation and routines) – items 34-37
Parents and staffing (Adults working together) – items 38-43

The ECERS-E consists of 4 sub-scales:

Literacy – items 1-6
Mathematics – items 7-9
Science and environment – items 10-12
Diversity – items 13-15

The structure of the two environmental scales is presented on the following pages while examples of individual items in the ECERS-R and ECERS-E appear in Appendix B.

Procedure

All 141 centres involved in the EPPE study were rated on the ECERS-R and ECERS-E rating scales by the regional Research Officer. Completion of the ECERS involved one day of observation as well as talking to the staff about aspects of the routine which were not visible during the observation session (for example, weekly swimming or seasonal outings).

Structure of the Environmental Rating Scale

I. Space and furnishings
1. Indoor space
2. Furniture for routine care, play and learning
3. Furnishings for relaxation and comfort
4. Room arrangement for play
5. Space for privacy
6. Child related display
7. Space for gross motor
8. Gross motor equipment

II. Personal care practices

9. Greeting/departing
10. Meals/snacks
11. Nap/rest
12. Toileting/diapering
13. Health practices
14. Safety practice

III. Language and reasoning

15. Books and pictures
16. Encouraging children to communicate
17. Using language to develop reasoning skills
18. Informal use of language

IV. Pre-school activities

19. Fine motor
20. Art
21. Music/movement
22. Blocks
23. Sand/water
24. Dramatic play
25. Nature/science
26. Math/number
27. Use of TV, video, and/or computers
28. Promoting acceptance of diversity

V. Social interaction

29. Supervision of gross motor activities
30. General supervision of children (other than gross motor)
31. Discipline
32. Staff-child interactions
33. Interactions among children

VI. Organisation and routines

34. Schedule
35. Free play (free choice)
36. Group time
37. Provisions for children with disabilities

VII. Adults working together

38. Provisions for parents
39. Provisions for personal needs of staff
40. Provisions for professional needs of staff
41. Staff interaction and cooperation
42. Supervision and evaluation of staff
43. Opportunities for professional growth

(Harms, T., Clifford, M. & Cryer, D., 1998)

Ratings are to be assigned in the following way, taking into account exact indicators for each item (see Appendix B):

- A score of 1 must be given if any indicator under 1 is scored "Yes".
- A rating of 2 is given when all indicators under 1 are scored "No" and at least half of the indicators under 3 are scored "Yes".
- A rating of 3 is given when all indicators under 1 are scored "No" and all indicators under 3 are scored "Yes".
- A rating of 4 is given when all requirements for 3 are met and at least half of the indicators under 5 are scored "Yes".
- A rating of 5 is given when all requirements for a 3 are met and all indicators under 5 are scored "Yes".
- A rating of 6 is given when all requirements for 5 are met and at least half of the indicators under 7 are scored "Yes".
- A rating of 7 is given when all requirements for a 5 are met and all indicators under 7 are scored "Yes".
- A score of NA (Not Applicable) may only be given for indicators or for entire items when permitted as shown on the scoresheet. Indicators which are scored NA are not counted when determining the rating for an item. Items scored NA are not counted when calculating subscale and total scale scores.

Harms, T., Clifford, M. & Cryer, D. (1998)

Structure of the Environmental Rating Scale - Extension

I. Literacy
1. 'Environmental print': Letters and words
2. Book and literacy areas
3. Adult reading with the children
4. Sounds in words
5. Emergent writing/mark making
6. Talking and Listening

II. Mathematics
7. Counting and the application of counting
8. Reading and writing simple numbers
- 9a. Mathematical Activities: Shape and space (select either 9a or 9b for evidence; choose the one which you observed most)
- 9b. Mathematical Activities: Sorting, matching and comparing

III. Science and Environment
10. Natural materials
11. Areas featuring science/science resources
- 12a. Science Activities: Science processes: Non Living (select one of a, b, c for evidence; choose one you observed most)
- 12b. Science Activities: Science processes: Living processes and the world around us
- 12c. Science Activities: Science processes: Food preparation

IV. Diversity
13. Individual learning needs
14. Gender equity
15. Multicultural Education

(Sylva, K., Siraj-Blatchford, I., Taggart, B., & Colman, P., 1998)

Ratings are to be assigned in the following way, taking into account exact indicators for each item (see Appendix B):

- A score of 1 must be given if any indicator under 1 is scored "Yes".
- A rating of 2 is given when all indicators under 1 are scored "No" and at least half of the indicators under 3 are scored "Yes".
- A rating of 3 is given when all indicators under 1 are scored "No" and all indicators under 3 are scored "Yes".
- A rating of 4 is given when all requirements for 3 are met and at least half of the indicators under 5 are scored "Yes".
- A rating of 5 is given when all requirements for a 3 are met and all indicators under 5 are scored "Yes".
- A rating of 6 is given when all requirements for 5 are met and at least half of the indicators under 7 are scored "Yes".
- A rating of 7 is given when all requirements for a 5 are met and all indicators under 7 are scored "Yes".
- A score of NA (Not Applicable) may only be given for indicators or for entire items when permitted as shown on the scoresheet.

Indicators which are scored NA are not counted when determining the rating for an item. Items scored NA are not counted when calculating subscale and total scale scores.

Occasionally centre records were consulted as evidence for rating an item. There were a number of items in the ECERS-R and –E which were not relevant for the centres in this sample, e.g. provision for 'nap/rest' was only considered to be relevant in 27 out of the 141 centres. Where items were not appropriate the item was excluded from further analysis, i.e. sub-scale scores were calculated from only the items which were scored/relevant. Inter-observer reliability was established to be of a high standard.

Inter-observer reliability

Before using observational rating scales in research it is necessary to establish inter-observer agreement. Good levels of agreement depend on a sound choice of instruments and good researcher training. EPPE observers spent many days in each centre before formal observation began. All research officers were trained extensively on the observational instruments and research officer from the University of Cardiff acted as the 'standard' in a reliability exercise. In each region five centres were observed by the regional research officer and the person acting as 'standard'. Each centre was observed and rated over the course of a whole day. At the end of the day the two observers who had independently scored the ECERS-R and ECERS-E compared their scores on the same observations. Hence reliability was established for two instruments in 25 centres chosen randomly throughout the regions.

The reliability for each pair of observers was computed on the basis of:

a) where each observer scored exactly the same point on a scale (% exact agreement)

b) a Kappa value was computed. Kappa is a statistic which measures the degree of agreement between two observers while allowing for the level of 'chance' agreement. The Kappa statistic is computed by the following formula:

$$\text{Kappa} = \frac{Ro - Rc}{1 - Rc}$$

where Ro = proportion agreement observed
Rc = proportion agreement that would occur by chance

The reliability figures broken down by ECERS-R, ECERS-E and combined ECERS for the 5 regions can be seen below.

ECERS

	% exact agreement	Kappa
West Midlands	82.0%	0.79
East Anglia	78.2%	0.75
North East	85.5%	0.83
Shire County	83.6%	0.81
Inner London	91.4%	0.90

ECERS-E

	% exact agreement	Kappa
West Midlands	88.4%	0.86
East Anglia	97.6%	0.97
North East	87.0%	0.85
Shire County	85.2%	0.83
Inner London	91.8%	0.90

Overall ECERS

	% exact agreement	Kappa
West Midlands	83.3%	0.81
East Anglia	84.0%	0.81
North East	86.0%	0.84
Shire County	84.0%	0.81
Inner London	91.4%	0.90

The results of this exercise indicated good to excellent inter-observer reliability in all regions.

Sample of regions and centres

The five regions in EPPE were strategically chosen to represent urban, suburban, and rural areas and also to include neighbourhoods with social and ethnic diversity. All local authorities in the EPPE sample were divided into five sampling areas, usually geographic divisions that already existed. Official lists of playgroups, nursery classes, nursery schools, private day nurseries, social services/voluntary day nurseries, and nursery schools combining care and education were obtained with the help of the local early years co-ordinators in every authority. Within each sampling area, one of each type of provision was randomly selected, yielding approximately 25 centres of various types in each region. Some over- and under-sampling occurred in each category of provision because not all authorities had sufficient numbers of local authority day nurseries. The ECERS observations were carried out in each of the 141 centres in the full EPPE sample in the period May 1998 – June 1999. The final sample of centres can be seen in Table 1.

Table 1. Pre-school sample for main analysis

Type of provision	N
Nursery Classes	25
Playgroups	34
Private day nurseries	31
Local authority centres	24
Nursery schools	20
Combined centres	7

Summary of the different types of provision

For the main analysis pre-schools were divided into six types.

1. Local Education Authority nursery classes (n=25)
   These are part of primary schools, have an adult:child ratio of 1:13, (one in every two adults is normally a 4 year graduate qualified teacher and the other adult has had 2 years childcare training) and usually offer only half-day sessions in term time, 5 days/week.

2. Voluntary playgroups and / or pre - schools (n=34)
   These have an adult:child ratio of 1:8, (training of adults is variable from none to graduate level. The most common type of training is based on short Pre-school Learning Alliance courses). All offer sessional provision in term time. Many children attend fewer then 5 days/week. Playgroups usually have fewer resources (facilities, materials and sole use of space) than other types of centres.

3. Private day nurseries (n=31)
   These have an adult:child ratio of 1:8, (normally the adults have a two-year childcare training, but some have less training). All offer full day care for payment.

4. Local authority (day care) centres (n=24)
   These came from the social services day care tradition, although in recent years many have come under the authority of the LEA. Thirteen in this group combined care and education with one teacher per centre or a peripatetic teacher shared with other centres. Eleven centres have not officially incorporated education into care. The ratio is 1:8, (normally the adults have a two-year childcare training. The combined centres have a small input from a teacher), and all offer full day care.

5. Nursery schools (n=20)
   These are 'traditional' nursery schools under the LEA with adult:child ratios of 1:13, (the headteacher would be a 4 year graduate qualified teacher with an early years background, other staff would reflect nursery classes in training), usually offering half-day provision. One in this group was an 'Early Excellence Centre'.

6. Nursery schools combining education and care (n=7)
   These are similar to nursery schools but have developed their provision of extended care to include full day care and parent involvement. They would have adult:child ratio of 1:13, (staffing would be the same as nursery schools for the over 3s). Even though these centres were chosen as a stratified random sample four in this group were 'Early Excellence Centres'.

RESULTS

A score for each sub-scale was calculated for the ECERS-R and the ECERS-E using the following equation:

$$\text{Sub-scale score} = \frac{\text{Sum of scores for each (applicable) item in the sub-scale}}{\text{Number of items scored}}$$

Total ECERS-R and ECERS-E scores were then calculated by summing the mean sub-scale scores (7 and 4 sub-scales respectively). Some items were not considered to be applicable for the centres, most notably the 'nap/rest' item on the Personal care practices sub-scale was not relevant to 114 centres. Only relevant items (i.e. those that were rated) were used in the calculation of sub-scale scores, thus non-relevant items had no effect on the results.

250

Distribution of scores and an overview of the sub-scales

The total ECERS-R and total ECERS-E scores were normally distributed (see Figures 1 and 2 respectively) and met parametric assumptions. Analysis of Variance (ANOVA) tests with Tukey's HSD post hoc tests were employed to compare differences between types of centres for total ECERS-R and ECERS-E scores. Furthermore, with one exception, the mean sub-scale scores were normally distributed and therefore ANOVA and Tukey's HSD tests were also employed in the analysis of the sub-scales. The exception to this is the ECERS-E science and environment sub-scale. As the parametric assumptions are not satisfied for this sub-scale, Kruskal-Wallis tests were used to explore the differences, and Mann-Whitney tests were used to test the significance of pair-wise comparisons and these will be reported later.

Figure 1. Histogram of total ECERS-R scores

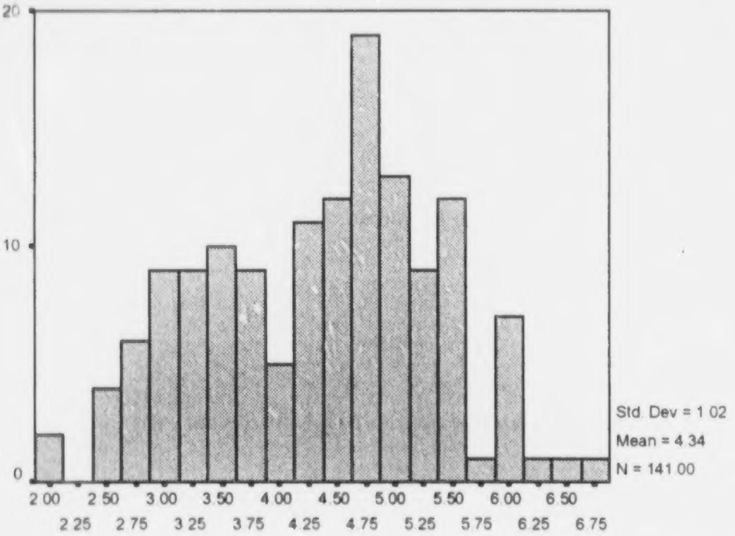


Figure 2. Histogram of total ECERS-E scores

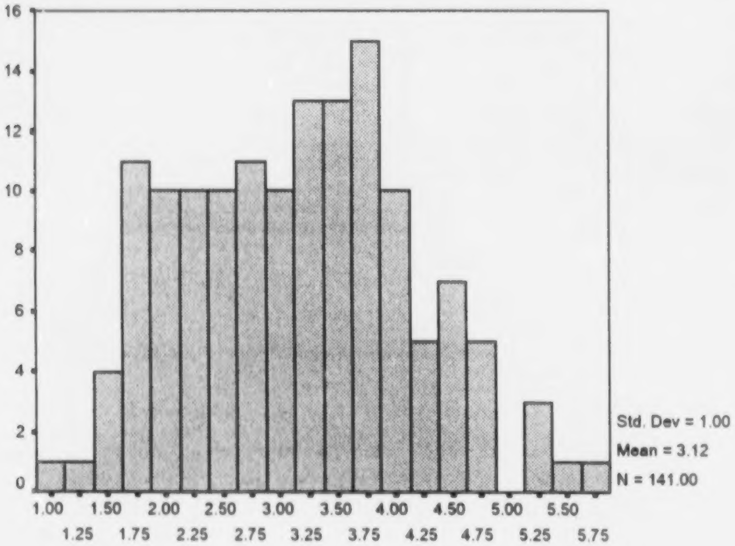


Figure 3 shows the means for the ECERS-R and the new scale based on Desirable Learning Outcomes, ECERS-E. The ECERS-R scores tend towards the top of the 'adequate' range and sometimes approach 'good'. The ECERS-E scores are more disappointing with provision for mathematics, science and diversity hovering around 'minimal' ratings. Note that these means are not weighted by proportion of children attending each type of provision.

Figure 3. Mean ECERS-R and ECERS-E scores

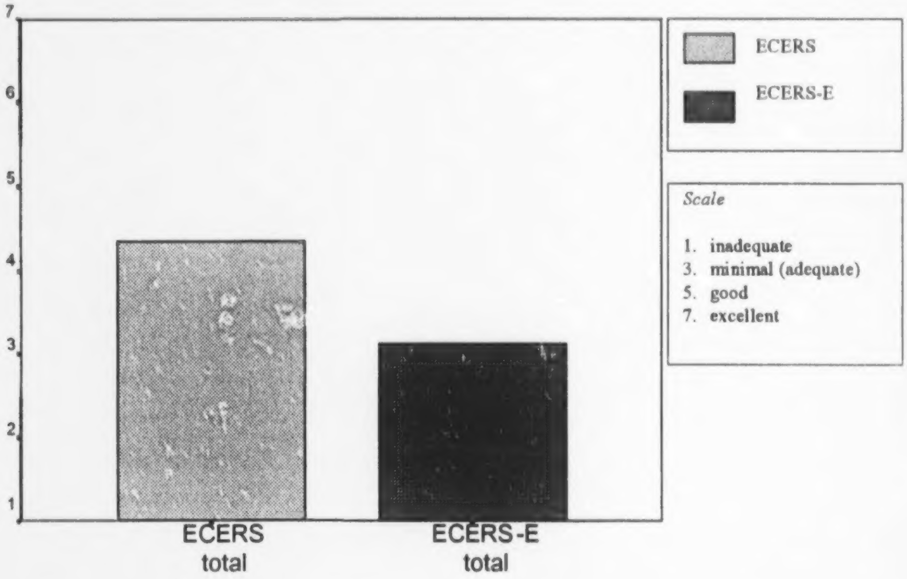
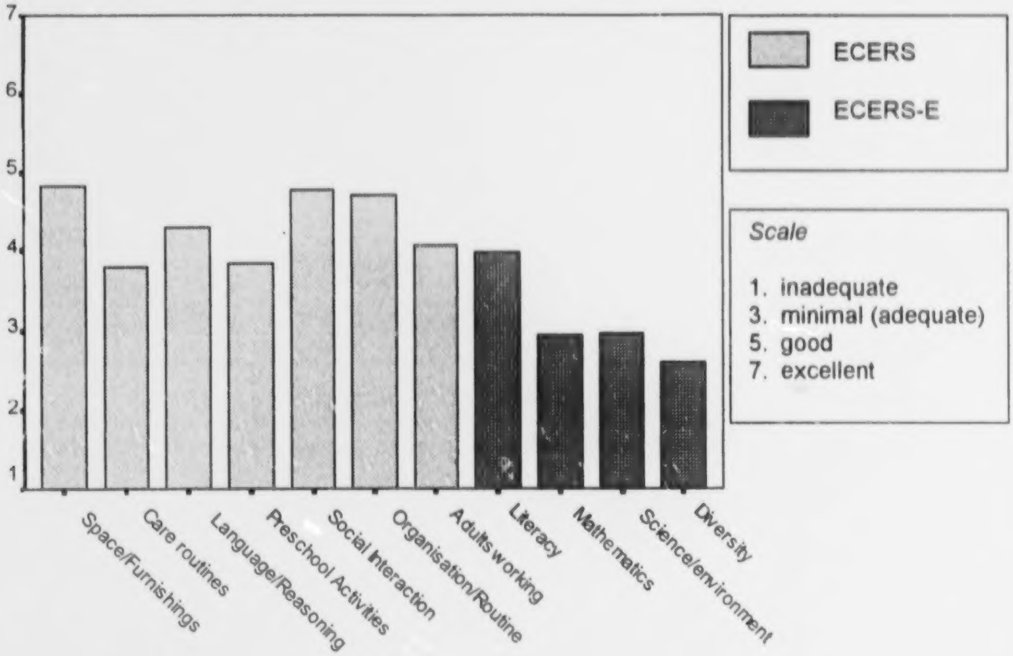


Figure 4 breaks down the two scales into their sub-scale components. The highest scores are found in 'social interactions', 'organisation and routines' and 'space and furnishings' while the lowest scores are seen in 'personal care', 'pre-school activities'. Although the ratings averaged across all types of provision are broadly satisfactory, closer inspection within types of provision reveals some striking differences. In this sample many centres were found to be exciting places where children were challenged and supported in their learning and where the interactions between staff and children were sensitive and enabling. Unfortunately, other centres were characterised by hasty planning and poor implementation of the curriculum.

Figure 4. ECERS-R and ECERS-E sub-scale scores

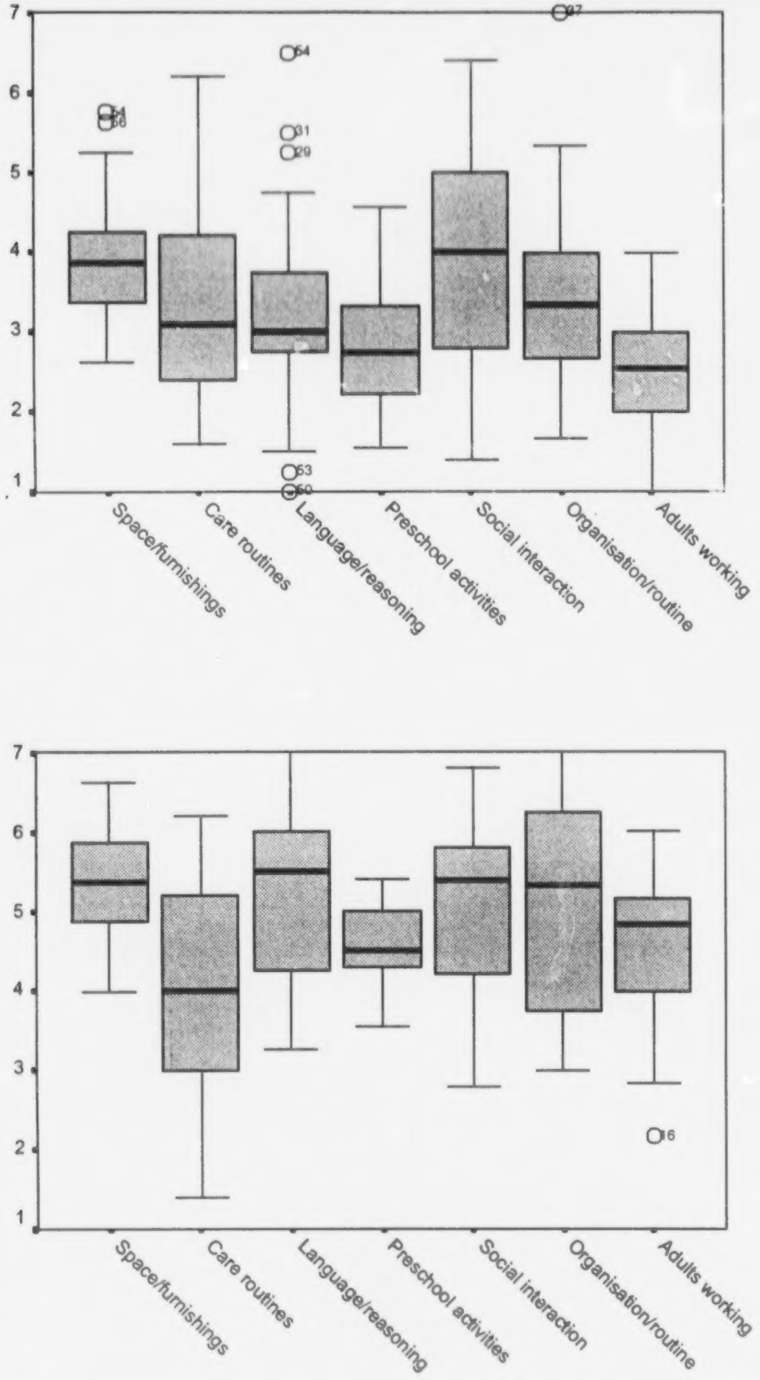


A descriptive profile of two settings: playgroups and nursery classes

As playgroups and nursery classes are the types of provision most commonly attended by 3 and 4-year-olds in England their ECERS-R profiles will be explored (see Figure 5). Playgroup provision is highest on the 'social interaction' sub-scale followed closely by 'space and furnishings'. They are weakest on 'adults working together'. Nursery classes also have their highest scores in 'social interactions' and 'space and furnishings' but they also have very good scores in 'language and reasoning' and 'organisation and routines'. Taken all together the nursery classes have higher scores overall when compared to playgroups and particular strength in language/reasoning and organisation/routine.

The comparative profiles of playgroups and nursery classes are similar to those found in an earlier study in London by Lera et al. (1996) who studied the ECERS profiles of 44 centres. Compared to Lera and colleagues, in this study playgroups were rated at a slightly lower level, but the particular strengths and weakness were the same. For example, the playgroups in this sample scored most highly on 'social interaction', and in Lera the social sub-scale was very high.

Figure 5. Box-plots of ECERS-R scores for playgroups (top) and nursery classes (bottom)



A comparison of pre-school environments according to type of provision

We turn now to the analyses on differences in the environment according to type of provision. Figure 6 shows that the three types of provision managed by the LEA had significantly higher scores for total ECERS-R when compared to other types of provision. A one-way ANOVA revealed that there were pre-school differences in the total ECERS-R scores (F 5,135 = 29.01, p<.001). Post hoc tests were carried out to identify exactly which pre-school types differed significantly from each other (see Appendix C). Local authority day centres, nursery classes, nursery schools and combined centres all had significantly higher scores than playgroups and private day nurseries. Additionally private day nurseries had a significantly higher total ECERS-R score than playgroups, and local authority centres had significantly lower total ECERS-R scores than nursery schools and combined centres.

We shall now consider ECERS-R sub-scales which focus specifically on aspects of the educational and care environment experienced by children and staff. Some sub-scales focus more on facilities while others describe pedagogical practices and the ways adults and children interact with one another in a purely social way. The pedagogy is described in terms of the balance between child-initiated activity and adult-led activities.

The trends seen in the ECERS-R total scores are fairly consistent throughout the sub-scale scores (see Figures 7-13). Of the six pre-school types, playgroups had the lowest mean sub-scale score for all 7 sub-scales; private day nurseries had the second lowest mean sub-scale scores for all sub-scales except language and reasoning in which they were rated slightly higher than local authority day nurseries. Nursery classes, nursery schools and combined centres were rated consistently high on all the sub-scales. One-way ANOVAs revealed that there were significant pre-school differences for 6 out of the 7 sub-scales (see Appendix D). (No significant pre-school differences were found in personal care routines.) Tukey's post hoc tests were again performed to identify which types of pre-school differed significantly from each other. The Tukey test results show that, in terms of quality measured on ECERS-R, the LEA provision generally scored highest followed by Local Authority day care, then private day nurseries, and finally playgroups. Although the pattern of significant pair-wise differences varied slightly across the sub-scales, in general post-hoc tests were similar to the Tukey test results for the total ECERS-R scores.

Figure 6. Total ECERS-R scores by pre-school type

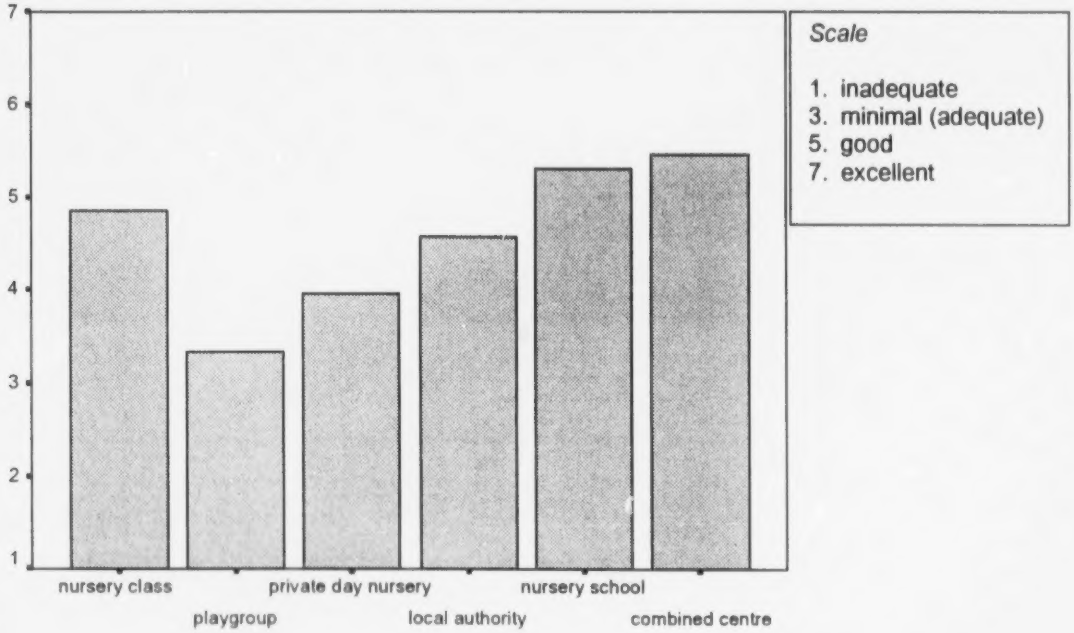


Figure 7. Space and furnishings by pre-school type

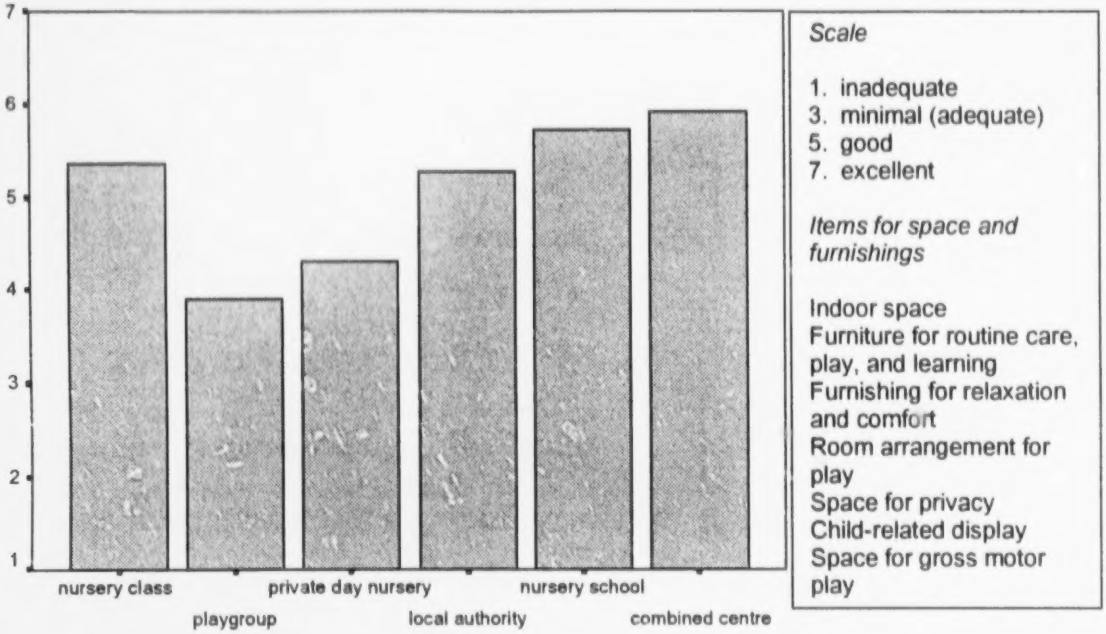


Figure 8. Personal care practices by pre-school type

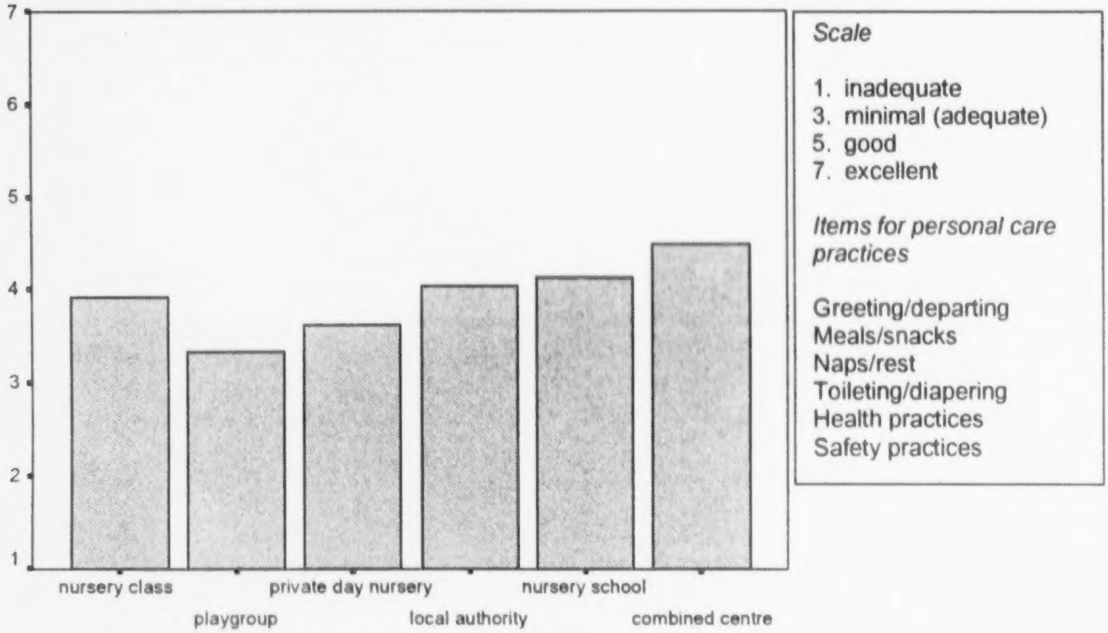
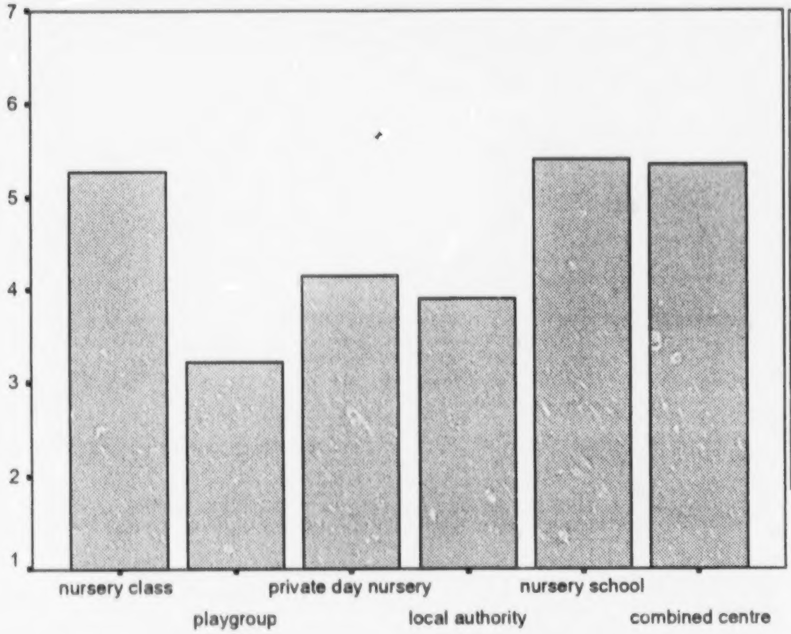


Figure 9. Language and reasoning by pre-school type



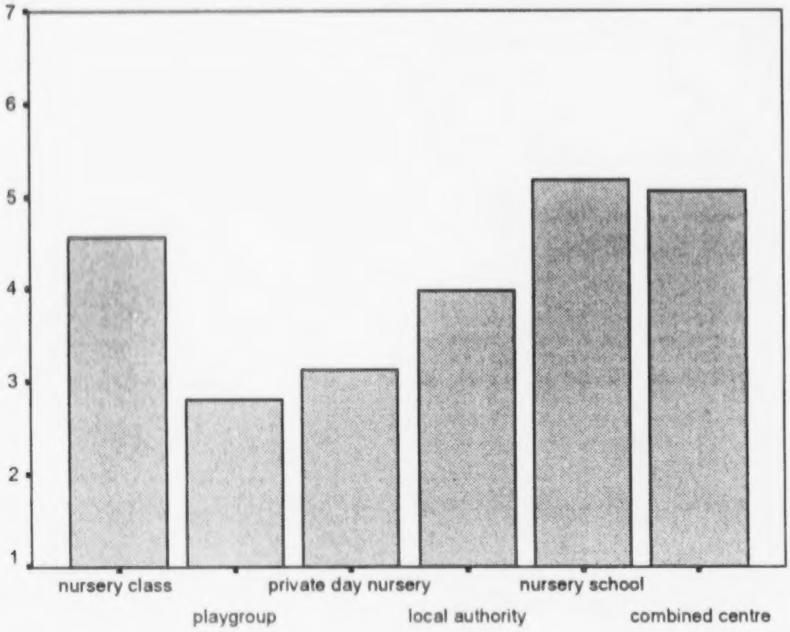
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for language and reasoning

Books and pictures
Encouraging children to communicate
Using language to develop reasoning skills
Informal use of language

Figure 10. Pre-school activities by pre-school type



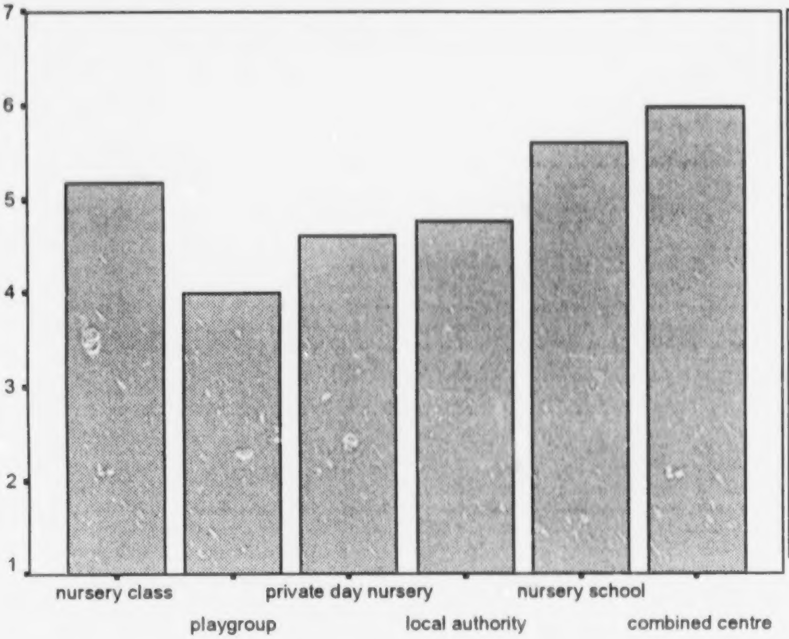
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for pre-school activities

Fine motor
Art
Music/movement
Blocks
Sand/water
Dramatic play
Nature/science
Maths/number
Use of TV/video/computers
Promoting acceptance of diversity

Figure 11. Social interaction by pre-school type



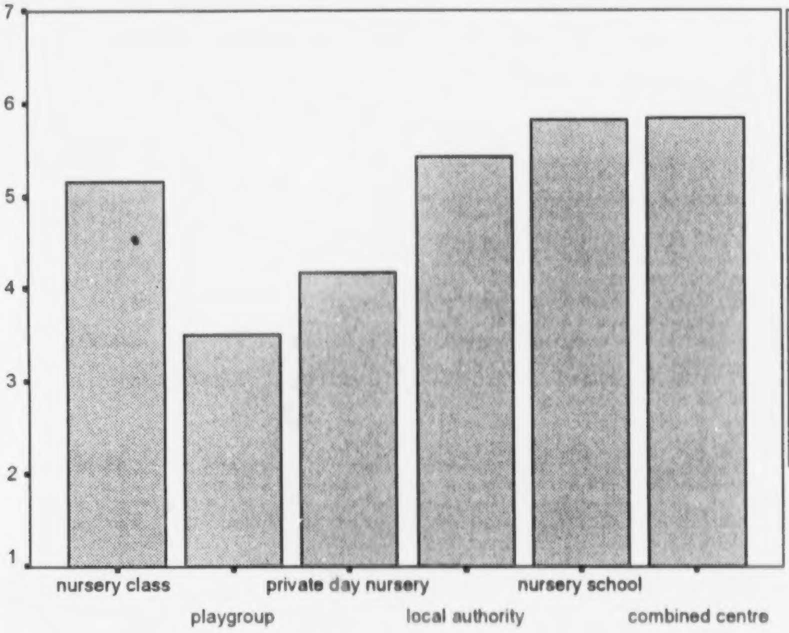
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for social interaction

Supervision of gross motor activities
General supervision of children (other than gross motor)
Discipline
Staff-child interactions
Interactions among children

Figure 12. Organisation and routines by pre-school type



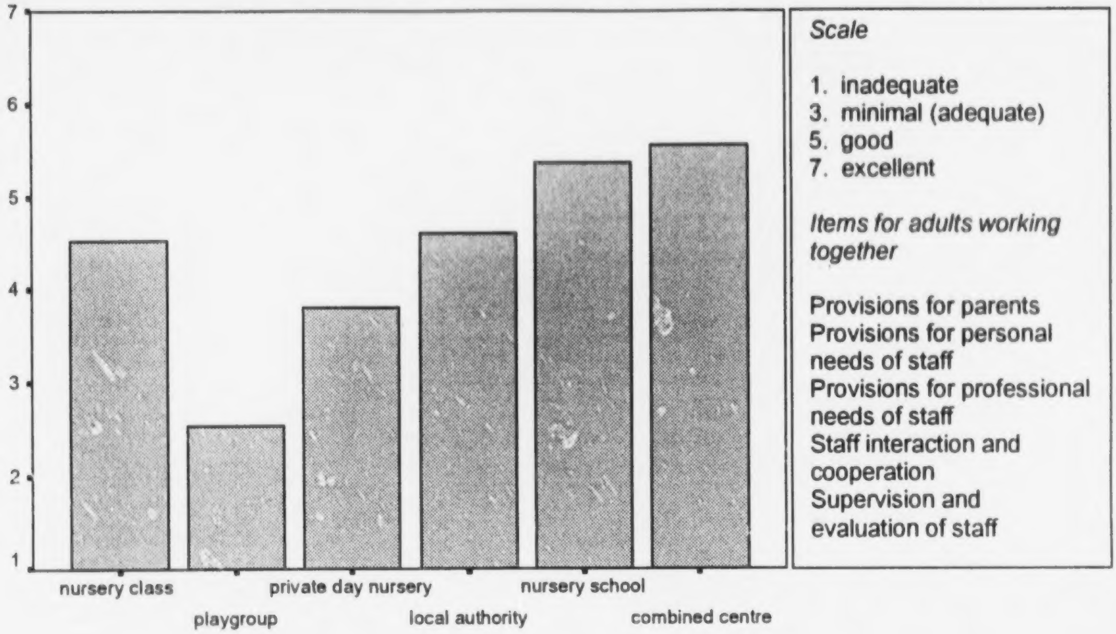
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for organisation and routine

Schedule
Group time
Provisions for children with disabilities
Free play

Figure 13. Adults working together by pre-school type

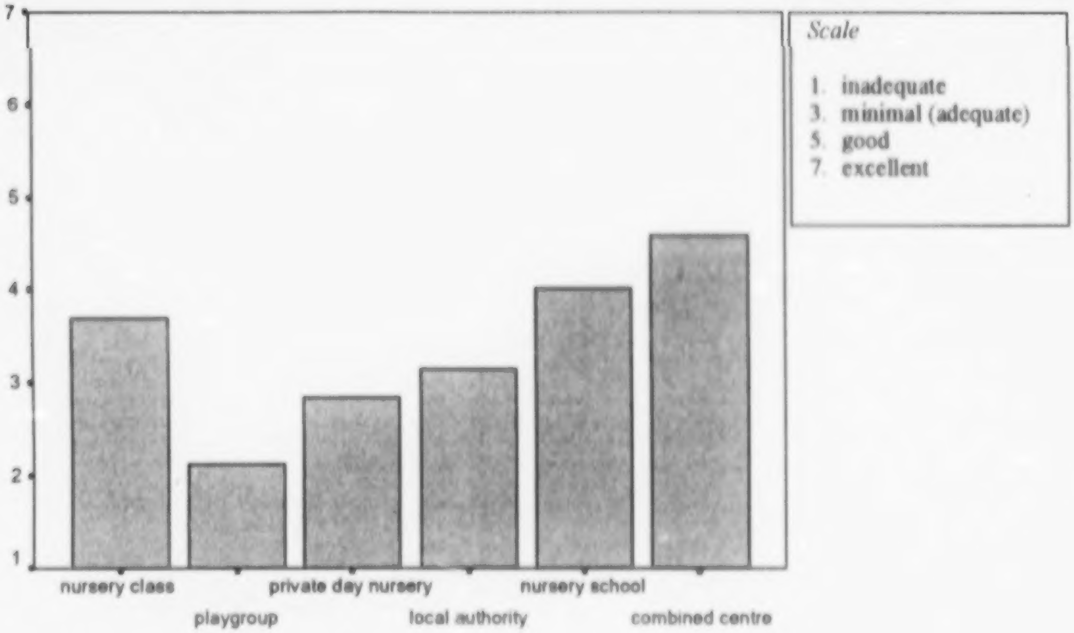


Of the six pre-school types, nursery classes, nursery schools and combined centres were rated consistently higher on all the sub-scales compared to other forms of provision. Playgroups had the lowest mean sub-scale score for all 7 sub-scales; private day nurseries had the second lowest mean sub-scale scores for all sub-scales except language and reasoning in which they were significantly higher than local authority day nurseries. Statistical tests revealed that there were significant differences for 6 out of the 7 sub-scales according to type of provision. (No significant pre-school differences were found in personal care routines.) The fine-grained statistical testing shows that there are broad bands in terms of quality measured on ECERS-R with the LEA provision always scoring highest followed by Local Authority day care, then private day nurseries, and finally playgroups.

The focus on curriculum in ECERS-E

The total ECERS-E scores for the 6 types of provision show an almost identical trend to the ECERS-R scores (see Figure 14). Playgroups and private day nurseries are rated lowest, nursery schools and nursery schools combining care and education are rated highest on most sub-scales. Total ECERS-E scores were found to differ significantly (F 5,135 = 31.76, p<.001) and post hoc Tukey tests were employed to identify precise pair-wise differences (see Appendix E). The results were almost identical to those found for the ECERS-R: LEA nursery classes, nursery schools and nursery schools combining care and education score most highly, significantly higher than playgroups and private day nurseries. Local authority (day care) centres score significantly more highly than playgroups,*but not* private day nurseries (this difference was significant for total ECERS-R scores); local authority (day care) centres also score significantly lower than *both* nursery schools and nursery schools combining care and education. Additionally, private day nurseries score significantly higher than playgroups, and centres combining care score significantly higher than nursery classes.

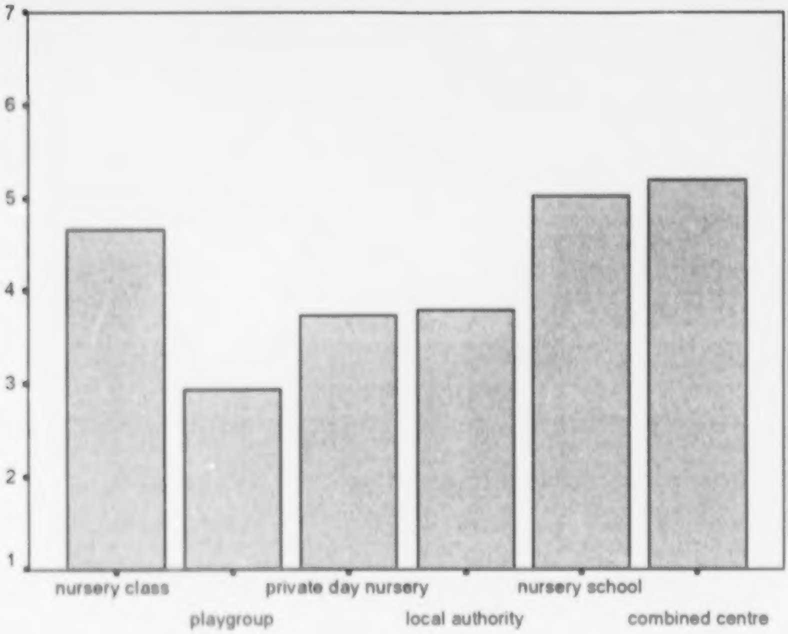
Figure 14. Total ECERS-E scores by pre-school type



LEA nursery classes, nursery schools and nursery schools combining care and education score most highly, significantly higher than playgroups and private day nurseries. Local authority (day care) centres score significantly higher than playgroups, *but not* private day nurseries; local authority (day care) centres also score significantly lower than *both* nursery schools and nursery schools combining care and education. Additionally, private day nurseries score significantly higher than playgroups, and centres combining care score significantly higher than nursery classes.

Moving away from total scores to sub-scale scores, ANOVAs on all four ECERS-E sub-scales show that there were significant differences according to type of provision (Kruskal-Wallis tests were used to analyse the Science and Environment sub-scale as it was not normally distributed; see Appendix F for test results). Nursery schools and nursery schools combining care and education are consistently rated more highly than playgroups and private day nurseries (see Figures 15-18).

Figure 15. Literacy by pre-school type



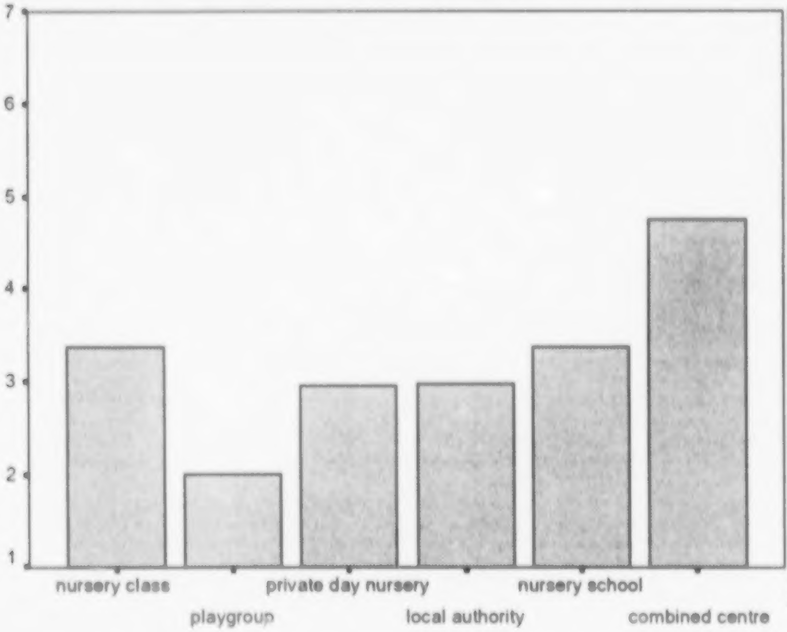
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for literacy

'Environmental print'
Letters and words
Book and literacy areas
Adult reading with the children
Sounds in words
Emergent writing/mark making
Talking and listening

Figure 16. Mathematics by pre-school type



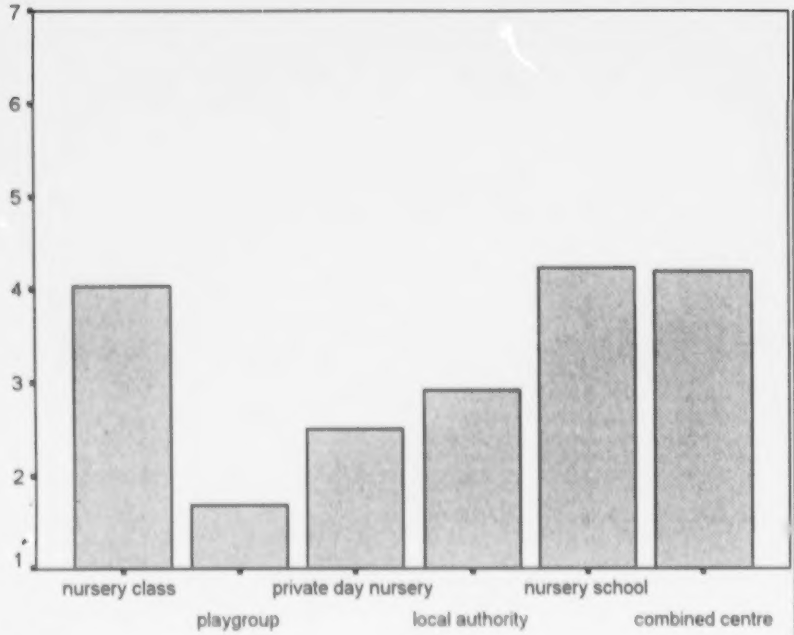
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for mathematics

Counting and the application of counting
Reading and writing simple numbers
Mathematical activities: Shape and space
Mathematical activities: Sorting matching and comparing

Figure 17. Science and Environment by pre-school type



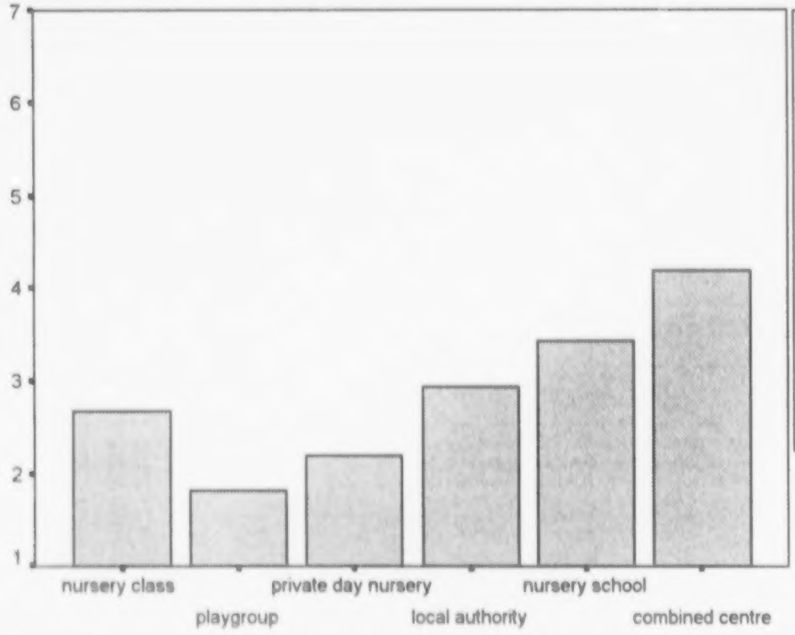
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for science and environment

Natural materials
Areas featuring science/science resources
Science activities: Science processes – non living
Science activities: Science processes – living processes and the world around us
Science activities: science processes – food preparation

Figure 18. Diversity by pre-school type



Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for the diversity sub-scale

Catering for individual learning needs
Gender equity and awareness
Multicultural education

To summarise, the findings on both rating scales showed that nursery schools, nursery schools combining care and education, and to a slightly lesser degree nursery classes, are rated in the 'good' range on both observations. Playgroups and private day nurseries are rated with lower 'quality' (minimal/adequate) provision while local authority day care (social service) centres are identified as medium provision. Social service centres combining care and education had significantly lower quality of provision than nursery schools which combine education and care.

Focus on Combined Centres

The results were re-analysed using an alternative method of grouping the pre-school types to explore the effects of joining together the social services combined centres (which have added a small amount of 'education') with the nursery schools combined centres which came from a strong tradition of education. Thus all maintained centres combining education and care were merged together in one group such that the 13 local authority day centres which combined care and education were combined with the 7 nursery schools which also combined education and care. (Note that all other pre-school groupings remained the same.) This new grouping of provision was analysed statistically because it will show how the scores of the group of former nursery schools now combining care are affected by adding combined centres which come from a social services tradition.

Table 2. Re-grouped sample for the analysis of combined centres.

Type of provision	N
Nursery Classes	25
Playgroups	34
Private day nurseries	31
Local authority centres	11
Nursery schools	20
Combined centres	20
Social service	(13)
Nursery schools 'plus'	(7)

The results for the total scores and sub-scale scores all show a fairly consistent pattern when the social services centres are added: the ratings of the combined centres group falls whereas ratings of the local authority centres often increase with the removal of the combined centres. With the original grouping the total ECERS-R scores for combined centres is the highest. When the scores for social services combined centres are added to this group their rating drops considerably and falls below that of the nursery schools and nursery classes. This indicates that the social services combined centres (which combine a small amount of education with care) diluted the quality of the nursery schools which have added care to education. As expected, significant pre-school differences were found for the total ECERS-R score (F 5,135 = 25.76, p<.001). There were only two changes in significance levels for pair-wise comparisons with this new grouping: although there is a trend in this direction, nursery schools and combined centres no longer performed significantly better than local authority day care centres.

Re-grouping the combined centres leads to similar changes in the sub-scales. For example, the score for the personal care dimension shows a similar pattern. The low score of the social services centres combining care and education dramatically brings down the group score of the nursery schools combining care and education. This is consistent with their high rank on the 'personal care' sub-scale. Significant pre-school differences were found for all ECERS-R sub-scales. ECERS-R sub-scale results are reported in Appendix G which compares the original grouping of combined centres (labelled A) with this new grouping (labelled B).

In this analysis there was significant variation across centre types on total ECERS-E score (F 5,135 = 28.34, p<.001). Post hoc analyses showed that the nursery schools, nursery classes and combined nursery schools did not differ from one another but were significantly higher than the other pre-school settings. Additionally, private day nurseries and local authority centres were significantly better than playgroups. These results are reported in Appendix H with the original grouping (labelled A) and the new grouping (labelled B).

203

Variation within type of provision

Although there was some variation in ECERS-R and ECERS-E scores within each type of provision, the amount of variation within type of provision did not differ between the different types of provision. A graphic summary of the variation found within each type of provision will be seen in the box-plots in Figures 19 and 20. In them the horizontal line inside the box represents the median score on each sub-scale and the length of the box shows the range in which 75% of the centres fall. The lines reaching up and down (called 'whiskers') show the location of higher and lower scores in that particular distribution.

Although playgroups generally had fewer resources and lower environmental ratings, there were exceptions to this. Coldspring Playgroup (not the real name) had a very strong ECERS-R profile, usually scoring above the combined average for all centres (see Playgroup 54 in Figure 19). Coldspring is an 'Outlier' because it scored substantially higher than other centres in the same group. It has good to excellent provision for furnishings, language and reasoning, science and the environment. These last two scales are closely related to curricular strength and attest to the sophisticated learning environment achieved in this exceptional playgroup which had no place for staff to store their belongings and no separate room for staff or parents. Despite this the staff met daily for planning and participated regularly in PLA training courses. So, it was possible for playgroups to achieve high ECERS-R ratings, especially on items which did not require expensive materials.

Figure 19. Box plot of mean ECERS-R score by pre-school type

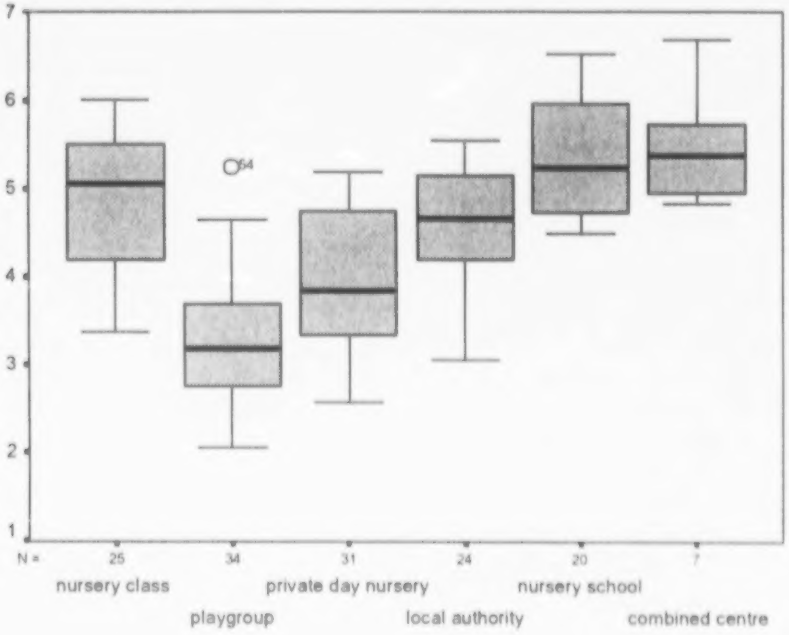
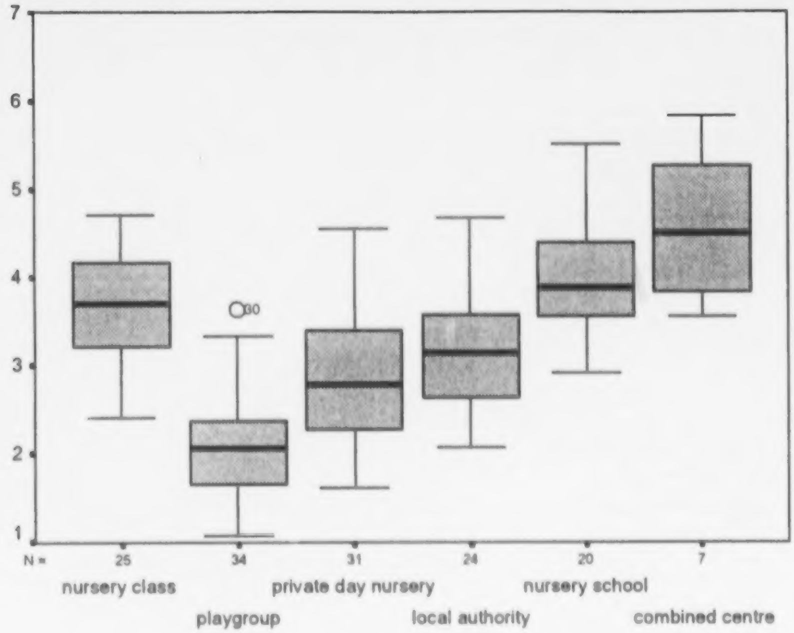


Figure 20. Box plot of mean ECERS-E score by pre-school type



Careful study of the box-plots shows that there was a range of scores within all the types of provision but that no one type of provision had exceptional amounts of 'spread'. This indicates that the use of means for comparisons earlier in the paper is appropriate and that there were few 'rogue' centres pulling down the means for any provision group (or 'angels' either, pulling them up). Lera et al.'s (1996) study reported similar box plots revealing that the highest scores were found in nursery classes, the next highest in social services day nurseries, and the lowest scores were seen in private day nurseries and playgroups. The earlier study in London by Lera et al. gives support to the EPPE findings from various regions around the country.

As ECERS-R and ECERS-E profiles may vary by the type of inspection received, the playgroups were divided into two categories: those receiving Ofsted and those receiving Children's Act inspections. Twenty-two centres underwent Ofsted inspection, 10 underwent Children's Act inspections and 2 did not supply this information. It was possible that playgroups with Ofsted inspection (with its strong focus on Desirable Learning Outcomes) would be rated differently from the rest of the playgroups and this possibility was explored by statistical tests.

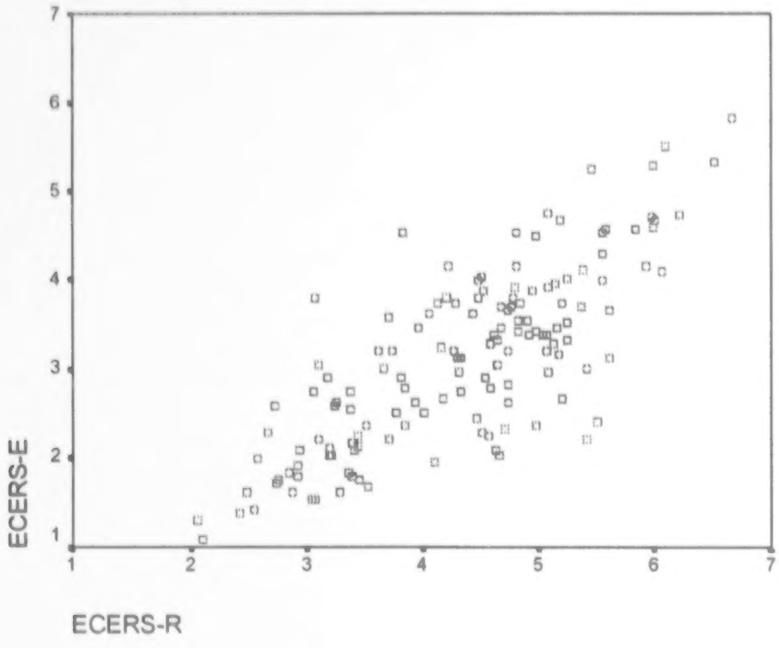
On total ECERS-R and on 6 of the 7 ECERS-R sub-scales there were no significant differences between the two groups of playgroups. The one exception was that the Ofsted-inspected playgroups scored significantly higher on the 'adults working together'. On the ECERS-E ratings, however, the Ofsted-inspected playgroups were higher on the total and also on all four of the sub-scales. This demonstrates that those choosing Ofsted inspection were providing a more rigorous learning environment, at least according to the DLO's.

Next we compared this sub-group of Ofsted-inspected playgroups (N = 22) with all the other forms of provision to see if removing those with Social Services inspection from the category 'playgroup' altered the relative performance across the types of provision. This reduced group of playgroups continues to have the lowest scores on every measure. ANOVAs and Tukey post-hoc tests were performed once more but the Ofsted-inspected playgroups rarely changed their relative position. (Note that the means scores in the Ofsted-inspected playgroups were usually higher than those with Children's Act inspection - but the relative position rarely changed.) There was one difference, however, and this was that Ofsted-inspected playgroups no longer have significantly lower scores on the ECERS-R total when compared to private day nurseries. They continue to have significantly lower ECERS-R scores when compared to the Social Services nurseries and all the LEA provision.

THE RELATIONSHIP BETWEEN ECERS-R AND ECERS-E

Figure 21 is a scattergram depicting the relationship between the two ECERS measures. The Pearson product moment correlation of 0.78 is consistent with the view that the different rating scales are tapping into 'quality' whilst measuring slightly different aspects of it. (Note that Tables 4 and 5 show the inter-correlations amongst sub-scales in each of the two ECERS scales). With the exception of 'personal care routines' most of the sub-scales are moderately correlated with one another. This means that centres high on one sub-scale tend to be high on others.
A copy of these tables may be obtained by writing to the authors.

Figure 21: Scattergram – ECERS (total) and ECERS-E (total)



ECERS-R AND ECERS-E FACTOR ANALYSIS

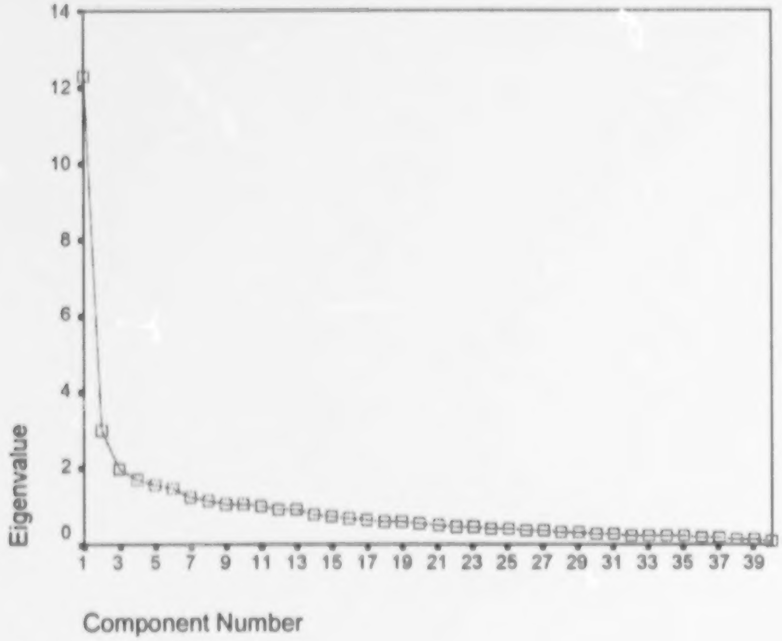
Global dimensions of quality

Factor analysis (principal component analysis, varimax rotated solution) was used to examine the structure of the ECERS-R and the ECERS-E, and to establish whether any clear dimensions could be identified in either scale. For some centres there were item scores missing in the ECERS-R and/or the ECERS-E. Most frequently this was due to the item being irrelevant to that particular centre, and for some items the item was irrelevant to more centres than it was relevant.

For example, item 11 gives a score for 'nap/rest' (e.g. sensitivity to individual children's needs and sleeping habits and sanitary provision); for 114 out of the 141 centres this item is not relevant as the children did not nap whilst at the pre-school centre. Items where a considerable number of centres had missing data were excluded from the analysis; where only a few centre scores were missing for an item these were replaced with the mean score for that item.

Factor analysis of the ECERS-R indicated the existence of two factors. Factor 1 accounts for a large proportion of the total variance, over 30%, factor 2 accounts for a more modest 7% of the variance, resulting in just over 38% of the variance being accounted for by these two factors (see Appendix I). Forty-one components were identified to account for 100% of the variance, eleven of which had Eigenvalues over 1, a method sometimes used to identify factors. However, the scree plot (figure 22) clearly indicates the existence of only two factors, the remaining components accounting for only small amounts of variance. The factors can be charaterised by the items which load most strongly (higher than 0.60) on these two factors and these are shown below. (The factor loadings of all 40 items included in the ECERS-R are detailed in Appendix I).

Figure 22. Scree plot for ECERS-R Factor analysis



Factor 1: Activities and facilities

Sand/water
Opportunities for personal growth
Art
Child related displays
Blocks
Provision for professional needs of staff
Provision for personal needs of staff

267

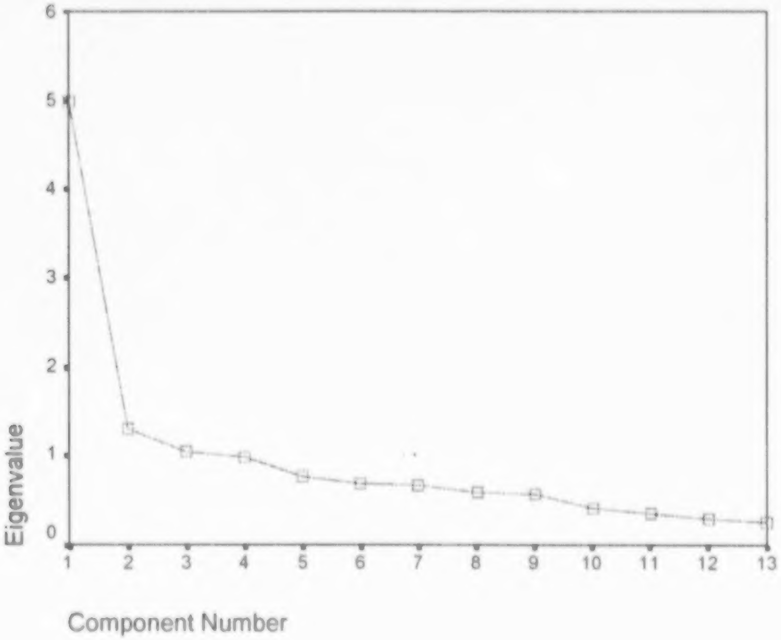
Factor 2: Communication and supervision

General supervision of children
Discipline
Staff-child interactions
Informal use of language
Language to develop reasoning skills
Interactions among children

Factor 1 includes items related to 'activities and facilities' (for children, staff and parents); and factor 2 includes items related to 'communication and supervision'. Note that factor 2 does not require material resources. Furthermore, Cronbach's alpha is very high for both factors 1 and 2 (alpha = 0.92 and 0.88 respectively) indicating that there is internal consistency in both factors.

Factor analysis of the ECERS-E again indicates the existence of 2 factors (see figure 23). Factor 1 accounts for just over 38% of the variance and factor 2 accounts for 10% of the variance, therefore almost 50% of the total variance is accounted for by these two factors. The items which load most strongly (higher than 0.60) on these two factors are shown below. (The factor loadings of all 13 items included in the ECERS-E are detailed in Appendix J).

Figure 23. Scree plot for ECERS-E Factor analysis



Factor 1: Curriculum Areas

'Environmental print' letters and words
Natural materials
Counting
Science resourcing
Talking and listening
Sounds in words

Factor 2: Diversity

Gender equity
Multicultural education
Book and literacy areas (provision for 'inclusive' literacy)

Two factors are again apparent, thirteen components were identified to account for 100% of the variance but again the scree plot, figure 23, indicates the existence of only 2 factors. Factor 1 contains items related to the Desirable Learning Outcomes: literacy, numeracy and science. Factor 2 consists of only three items related to diversity and inclusive literacy. Cronbach's alpha is high for factor 1 (alpha = 0.84) but only moderate for factor 2 (alpha = 0.64) suggesting that there is good internal reliability only for factor 1. With the exception of item 6 ('talking and listening') all items in this factor could potentially fall into the 'activities and facilities' factor identified in the ECERS-R factor analysis, a combined ECERS-R and ECERS-E factor analysis will be carried out to see if any common factors are identifiable.

The two ECERS were combined for a final factor analysis. This analysis was carried out for exploratory purposes only. The sample of centres is too small for the number of items but may provide support for the previous two factor analyses. The combined ECERS-R and ECERS-E scree plot closely resembles the ECERS-R scree plot, indicating the existence of two factors again. Factor 1 accounts for just over 30% of the total variance and factor 2 accounts for nearly 7% of the variance, just over 37% of the total variance is accounted for by these two factors. The factors which load most strongly (higher than 0.65) on both factors are shown below.

Factor 1

Sand/water
Art
Emergent writing and mark making
Opportunities for professional growth
Child-related displays
'Environmental print' letters and words
Natural materials

Factor 2

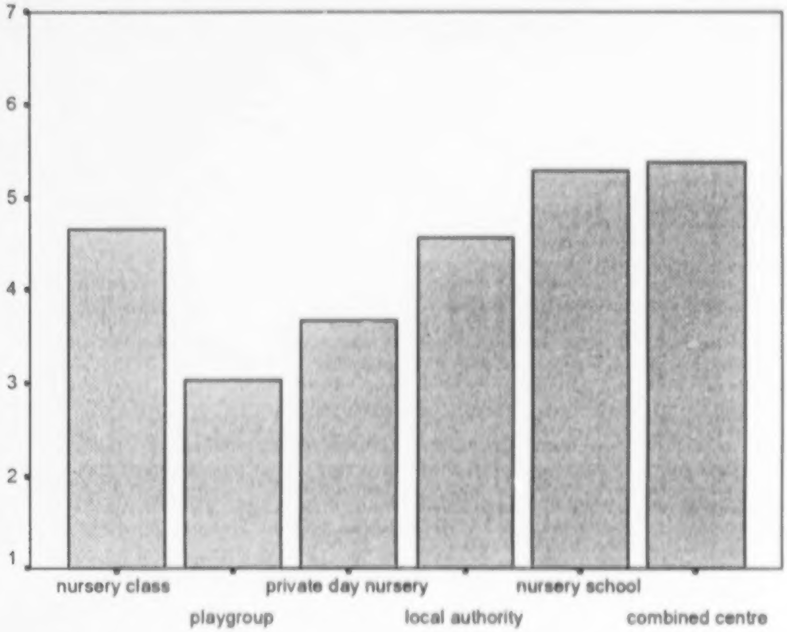
General supervision of children
Discipline
Informal use of language
Staff-child interactions
Talking and listening
Using language skills to develop reasoning skills

This combined factor analysis yields almost identical results to those found in the ECERS-R analysis on its own. Again two factors were identified, but there were two minor exceptions. Firstly, group time was mostly highly loaded on factor 1 in the ECERS-R analysis but is mostly highly loaded on factor 2 in this combined analysis. (Note however that in both instances this item is loaded comparatively highly on both factors.) Secondly, there is some change in rank order of the items. For example, in the ECERS-R analysis opportunities for professional growth was the second most highly loaded item on factor 1, with the combined analysis it is the fourth highest loaded item, and the third highest item from the ECERS-R scale. All except three ECERS-E factors are most highly loaded on factor 1. As expected 'talking and listening' is most highly loaded on factor 2. The other two ECERS-E factors that load most highly onto factor 2 are: adult reading with the child, and sounds in words. As with the ECERS-R analysis, factor 1 can be interpreted as 'activities and facilities' where as factor 2 can be interpreted as 'communication and supervision'. The rating scale for 'adult reading with the child' requires discussion and close supervision (e.g. one-to-one reading) for a high score suggesting that this item could fit into the 'communication and supervision' factor. The item 'sounds in words' does not belong so clearly in this factor but it is worth noting that it is loaded at fairly similar (low) levels on both factors, and the same is true of the 'group time' item (see Appendix G). Again, Cronbach's alpha is very high for both factors (alpha = 0.94 for factor 1 and alpha = 0.89 for factor 2) indicating there is good internal consistency in both factors.

Comparison between types of provision on the two dimensions

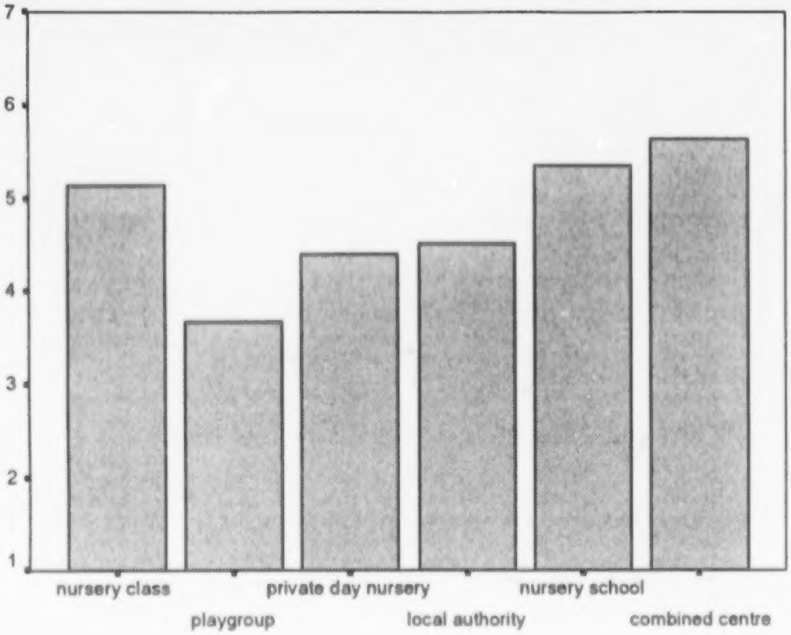
Each centre was given an unweighted factor score for the two factors in ECERS-R. The scores of the 6 pre-school types on the 'activities and facilities' were compared first. Nursery schools and nursery schools combining care with education are rated the highest, with playgroups and private day nurseries rated the lowest (see figure 24). The differences in scores between types of provision follows the same trend as seen in the previous analysis but ANOVAs revealed that these differences were not significant.

Figure 24. Mean scores for activities and facilities factor by pre-school type



The scores of the different pre-school types were compared for the second factor identified by factor analysis, 'communication and supervision'. Significant pre-school differences were found for the 'communication and supervision' factor (F5,135 = 9.43, p <0.001). This is interesting in that these items do not require well-resourced premises or materials. Further analysis using Tukey H.S.D tests showed that, for the communications and supervision factor, nursery classes, nursery schools and nursery schools combining care had significantly higher ratings than playgroups, and additionally, nursery schools had significantly higher ratings than private day nurseries.

Figure 25. Mean score for communication and supervision factor by pre-school type



DISCUSSION

Relating this study to previous research

The main findings from this large study on the characteristics and quality of pre-school provision are supported by other sources. Research in London by Lera et al in 1996 showed higher scores on ECERS for nursery classes, followed by social services day nurseries and then playgroups. The latest OFSTED inspection report (1999) describes more favourably provision in the maintained sector (local authority day nurseries) followed by the private day nurseries, followed by the voluntary playgroups. Further confirmation of the stronger provision in the maintained sector is found in the latest inspection report for Wales (OHMCI, 1999).

Looking back at Figure 4 reveals the sub-scale scores for the entire sample, undivided as to type of provision. Across the sample, the totals and sub-scale scores on ECERS-R range from 4 to 5, just short of 'good' provision. Kwan (1997) summarised comparative data from studies using ECERS in other countries. How does the U.K. compare? The other countries with sub-scale means similar to the U.K. include Canada (a small group of 'superior' centres studied in Montreal) and Sweden along with one study from the U.S.A. (Head Start). Studies in Germany and New Zealand report sub-scale means just under 4 with studies in Bermuda reporting means closer to 3. Hence findings from other 'western' countries indicate that the U.K. is not too different from Sweden and parts of North America; it is marginally better than Germany and New Zealand. All these comparisons must be taken with some caution as they may not be fully representative of the country and only one of the studies reported here had a sample as large as that in the EPPE study.

Profiles found in different types of provision

Although the EPPE results present a picture of satisfactory pre-school environments, centres varied considerably in their ECERS profiles according to type of provision. The traditional nursery schools and LEA nursery-combined-with-care usually had the highest scores, often close to 'excellent', followed by nursery classes. Unfortunately many young children are attending centres where the provision is 'minimal' rather than 'good'. The playgroups and private day care nurseries typically had the lowest scores, with social services day care nurseries somewhere in between. This study shows clearly that well-resourced pre-school centres which had a history of 'education' (including a more substantial number of trained teachers, LEA in-service training, Ofsted 'Section 10' rather than 'pre-school Section 5' inspection) were providing the highest quality of care and education. The centres from the 'care' tradition, despite their more favourable ratios, were offering a different level of care and education. It is relevant here to mention that care-oriented provision usually offers the lowest salaries to staff, employs workers with the lowest level of qualifications, and has limited access to training and higher staff turnover. We found that provision above the 'minimal' level was concentrated in well-resourced centres.

The group of seven LEA nursery schools with a long history of combined education and care had very high ratings when they were a stand-alone group. When the 13 social service combined centres were grouped with them, the average score of the new grouping was depressed (or the 'quality became diluted'). This indicates that the newer emphasis on 'education' in social service nurseries, established by introducing one (often part-time) teacher, is slow to filter through the system and that the more traditional social services day care nurseries (when grouped on their own) had adequate to good scores.

Appropriateness of ECERS-R and ECERS-E

This preliminary report on the EPPE centres has concluded that they vary in 'quality' as measured on an international instrument (devised initially in North America) and one devised in the UK based on the Desirable Learning Outcomes. It is necessary to ask whether some types of provision have been 'disadvantaged' by the structure and the content of ECERS-R. For example, it is not easy for a playgroup to provide special facilities for parents or for staff, both of which are required for high ECERS-R ratings on certain items. Brophy, Statham, and Moss (1992) have suggested that the focus of playgroups on parental involvement is not adequately assessed through ECERS. (Note that ECERS-R has been used by the EPPE project but the same arguments will apply). The ECERS-R includes an item on parental involvement but the main data on this topic within the EPPE sample will be derived from interviews with centre managers (n = 141) and with parents (n = 2,000+) which will be reported in later publications.

Although it remains a possibility that ECERS-R disadvantaged some sectors of provision, the pattern of results seen in the ECERS-E analyses was so similar to the ECERS-R findings that we cannot conclude that ECERS-R is inappropriate to the UK. Because the curriculum sub-scales in ECERS-E were devised to tap educational and care provision based on the UK Desirable Learning Outcomes, they are well tuned to assess English provision and their agreement with the original ECERS-R validates its use here in England. Moreover the playgroups were rated rather low on the 'communication and supervision' factor which requires no material resources.

To conclude, this study found that the standard of education and care in pre-school provision was of adequate standard in the vast majority of settings. In the 'educational' settings, it was particularly good. Future papers in this series will describe the outcomes of such provision in terms of children's cognitive, social and behavioural development. When the 'value added' analyses of children's outcomes are available, we will know better whether these observational profiles predict children's longer-term intellectual, social and behavioural progress. If they do, we will have established a firm link between educational and care processes and children's developmental outcomes. Although studies using the ECERS in other countries have sometimes shown such links, their applicability to the UK needs to be confirmed. The identification of 'quality characteristics' in pre-schools awaits confirmation from analyses of children's progress when entering school and at the end of Key Stage 1.

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Appendix A

Reliability and validity of the ECERS-R in previous research

ECERS-R is a revision of the well-known and established original ECERS scale. It maintains the same conceptual framework as well as the same basic scoring approach and administration. Since the original version has a long history of research and demonstrating that quality as measured by the ECERS has good predictive validity (i.e., Peisner-Feinberg & Burchinal, 1997; Whitebook, Howes & Phillips, 1990) the revised version would be expected to maintain that form of validity. The major question to be answered here is whether the changes to the scale have affected the inter-rater reliability.

An extensive set of field tests of the ECERS-R was conducted in the spring and summer of 1997 in 45 classrooms. The authors were not satisfied with the inter-rater reliabilities obtained and decided that further revision was needed. Data from this first study were used to determine changes needed to obtain a fully reliable instrument. Substantial revisions were made to the first field-test draft of the scale, using the indicator-level reliabilities as a guide to focus the revision process. After the revisions were made, a second test, focusing on inter-rater reliability, was conducted in a sample of 21 classrooms, equally distributed among high-, medium-, and low-scoring rooms in the initial test. Even though this test was conservative, with minimal chances to develop reliability through the discussions that customarily take place following a practice observation, the results of the second test were quite satisfactory.

Overall, the ECERS-R is reliable at the indicator and item level, and at the level of the total score. The percentage of agreement across the full 470 indicators in the scale is 86.1%, with no item having an indicator agreement level below 70%. At the item level, the proportion of agreement was 48% for exact agreement and 71% for agreement within one point. Perhaps the most appropriate measure of reliability on a scale such as the ECERS is the Kappa, which takes into account the distance between scores given by two independent raters, rather than simple agreement or nonagreement (Weigel & Castellan, 1988). Kappas of 0.50 and higher are considered acceptable. All the interrater weighted Kappas had scores over .50; most were much higher. Only Item 17, Using language to develop reasoning skills, had a Kappa in the low range.

For the entire scale, the correlations between the two observers were .92 product moment correlation (Pearson) and .865 rank order (Spearman). The interclass correlation was .92. These figures are all within the generally accepted range with the total levels of agreement being quite high. These overall figures are comparable with the levels of agreement in the original ECERS.

Internal consistency of the scale at the subscale and total score levels was also examined. Subscale internal consistencies range from .71 to .88 with a total scale interval consistency of .92. These levels of internal consistency indicate that the subscales and total scale can be considered to form reasonable levels of internal agreement providing support for them as separate constructs. Many questions regarding reliability and validity remain unanswered. For example, studies will be required to answer questions such as: To what degree does the revised version maintain the same magnitude of score as the original version? And do the two versions both predict child development outcomes similarly? In addition, larger data sets will be required to examine empirically the factor structure of the scale. Research on the original ECERS usually has provided two factors, one focusing on the teaching aspect of environments and one on the provision of opportunities aspect (Rossbach, Clifford, & Harms, 1991; Whitebook, Howes, & Phillips, 1990). Further research will be needed to determine the extent to which the ECERS-R reveals the same empirical dimensions.

In summary, the field tests in the U.S. revealed quite acceptable levels of inter-rater agreement at the three levels of scoring-indicators, items, and total score. In addition, there is support for using the scores of the sub-scales and the total score to represent meaningful aspects of the environment.

Previous studies using ECERS (before revision to ECERS-R)

Many studies all over the world have used the ECERS to describe education and care processes (Farquhar, 1989; Hagekull and Bohlin, 1995; Lera, Owen and Moss, 1996; Rossbach, Clifford and Harms, 1991) Scarr, Eisenberg, Deter-Deckard, 1994; Tietze, Cryer, Bairrão, Palacios and Wetzel, 1996; and, Whitebook, Howes and Phillips, 1990). A further group of studies have demonstrated that the 'quality' characteristics measured in ECERS are significantly related to children's developmental outcomes (Beller, Stahnke, Butz, Stahl, and Wessesls, 1996; Cost, Quality and Child Outcomes in Child Care Centre Research Team, 1995; Kwan, Sylva and Reeves, 1998; Kwan, 1997; McCartney, 1984; Peisner-Feinberg and Burchinal, 1997; Phillips, Scarr and McCartney, 1987; Phillips, McCartney and Scarr, 1987).

Appendix B.

Following are four sample items from the ECERS-Revised

34. **Schedule**

Item	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
Y N	1.1 Schedule is *either* too rigid, leaving no time for individual interests, OR too flexible (chaotic), lacking a dependable sequence of daily events.*	Y N	3.1 Basic daily schedule exists that is familiar to children (Ex. routines and activities occur in relatively the same sequence most days).	Y N	5.1 Schedule provides balance of structure and flexibility (Ex. regularly scheduled outdoor play period may be lengthened in good weather).	Y N	7.1 Smooth transitions between daily events (Ex. materials ready for next activity before current activity ends; most transitions handled a few children at a time rather than whole group).
		Y N	3.2 Written schedule is posted in room and relates generally to what occurs.**	Y N	5.2 A variety of play activities occur each day, some teacher directed and some child initiated.	Y N	7.2 Variations made in schedule to meet individual needs (Ex. shorter story time for child with short attention span; child working on project allowed to continue past scheduled time; slow eater may finish at own pace).
		Y N	3.3 At least one indoor and one outdoor play period (weather permitting) occurs daily.	Y N	5.3 A substantial portion of the day is used for play activities.		
		Y N	3.4 Both gross motor and less active play occur daily.	Y N	5.4 No long period of waiting during transitions between daily events.		

*34. **Notes for Clarification***

* Daily events refers to time for indoor and outdoor play activities as well as routines such as meals/snacks, nap/rest, and greeting/departing.

** The written schedule need not be followed to the minute. The intent of this indicator is that the general sequence of events is being followed.

Ratings are to be assigned in the following way, taking into account exact indicators for each item (see Appendix X):

- A score of 1 must be given if any indicator under 1 is scored "Yes".
- A rating of 2 is given when all indicators under 1 are scored "No" and at least half of the indicators under 3 are scored "Yes".
- A rating of 3 is given when all indicators under 1 are scored "No" and all indicators under 3 are scored "Yes".
- A rating of 4 is given when all requirements for 3 are met and at least half of the indicators under 5 are scored "Yes".
- A rating of 5 is given when all requirements for a 3 are met and all indicators under 5 are scored "Yes".
- A rating of 6 is given when all requirements for 5 are met and at least half of the indicators under 7 are scored "Yes".
- A rating of 7 is given when all requirements for a 5 are met and all indicators under 7 are scored "Yes".
- A score of NA (Not Applicable) may only be given for indicators or for entire items when permitted as shown on the scoresheet. Indicators which are scored NA are not counted when determining the rating for an item. Items scored NA are not counted when calculating subscale and total scale scores.

Item	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
17. Using language to develop reasoning skills							
Y N	1.1 Staff do not talk with children about logical relationships (Ex. ignore children's questions and curiosity about why things happen, do not call attention to sequence of daily events, differences and similarity in number, size, shape; cause and effect).	Y N	3.1 Staff sometimes talk about logical relationships or concepts (Ex. explain that outside time comes after snacks, point out differences in sizes of blocks child used).	Y N	5.1 Staff talk about logical relationships while children play with materials that stimulate reasoning (Ex. sequence cards, same-different games, size and shape toys, sorting games, number and math games).	Y N	7.1 Staff encourage children to reason throughout the day, using actual events and experiences as a basis for concept development (Ex. children learn sequence by talking about their experiences in the daily routine or recalling the sequence of a cooking project).
Y N	1.2 Concepts* are introduced inappropriately (Ex. concepts too difficult for age and abilities of children; inappropriate teaching methods used such as worksheets without any concrete experiences; teacher gives answers without helping children to figure things out).	Y N	3.2 Some concepts are introduced appropriately for ages and abilities of children in group, using words and concrete experiences (Ex. guide children with questions and words to sort big and little blocks or to figure out the cause for ice melting).	Y N	5.2 Children encouraged to talk through or explain their reasoning when solving problems (Ex. why they sorted objects into different groups; in what way are two pictures the same of different).	Y N	7.2 Concepts are introduced in response to children's interests or needs to solve problems (Ex. talk children through balancing a tall block building; help children figure out how many spoons are needed to set table).

*17. **Note for Clarification***

* Concepts, include same/different, matching, classifying, sequencing, one-to-one correspondence, spatial relationships, cause and effect.

32. Staff-child interactions*

Item	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
Y N	1.1 Staff members are not responsive to or not involved with children (Ex. ignore children, staff seem distant or cold).	Y N	3.2 Staff usually respond to children in a warm, supportive manner (Ex. staff and children seem relaxed, voices cheerful, frequent smiling).	Y N	5.1 Staff show warmth through appropriate physical contact (Ex. pat child on the back, return child's hug).	Y N	7.1 staff seem to enjoy being with the children.
Y N	1.2 Interactions are unpleasant (Ex. voices sound strained and irritable).	Y N	3.2 Few, if any, unpleasant interactions.	Y N	5.2 Staff show respect for children (Ex. listen attentively, make eye contact, treat children fairly, do not discriminate).	Y N	7.2 Staff encourage the development of mutual respect between children and adults (Ex. staff wait until children finish asking questions before answering; encourage children in a polite way to listen when adults speak).
Y N	1.3 Physical contact used principally for control (Ex. hurrying children along) or inappropriately (Ex. unwanted hugs or tickling).			Y N	5.3 Staff respond sympathetically to help children who are upset, hurt, or angry.		

32. Note for Clarification

* While the indicators in this item generally hold true across a diversity of cultures and individuals, the ways in which they are expressed may differ. For example, direct eye contact in some cultures is a sign of respect; in others, a sign of disrespect. Similarly some individuals are more likely to smile and be demonstrative than others. However, the requirements of the indicators must be met, although there can be some variation in the way this is done.

Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7

4. Room arrangement for play

Y N	1.1 No interest centers* defined.	Y N	3.1 At least two interest centers defined.	Y N	5.1 At least three interest centers defined and conveniently equipped (Ex. water provided near art area; shelving adequate for blocks and manipulatives).	Y N	7.1 At least five different interest centers provide a variety of learning experiences.
Y N	1.2 Visual supervision of play area is difficult.	Y N	3.2 Visual supervision of play area is not difficult.			Y N	7.2 Centers are organized for independent use by children (Ex labelled open shelves; labelled containers for toys; open shelve are not over-crowded; play spac near toy storage).
		Y N	3.3 Sufficient space for several activities to go on at once (Ex. floor space for blocks, table space for manipulatives, easel for art).	Y N	5.2 Quiet and active centers placed to not interfere with one another (Ex. reading or listening area separated from blocks or housekeeping).	Y N	7.3 Additional materials available to add to or change centers.
		Y N NA	3.4 Most spaces for play are accessible to children with disabilities enrolled in the group. *NA permitted.*	Y N	5.3 Space is arranged so most activities are not interrupted (Ex. shelves placed so children walk around, not through, activities; placement of furniture discourages rough play or running).		

4. Note for Clarification

* An interest center is an area where materials, organized by type, are stored so that they are accessible to children, and appropriately furnished play space is provided for children to participate in a particular kind of play. Examples of interest centers are art activities, blocks, dramatic play, reading, nature/science, and manipulatives/fine motor.

Question

(7.3) Are there any additional materials available that you add to the interest centers?

283

284

Following are three sample items from the ECERS-Extension

	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
3. Adult reading with the children							
Y N	1.1 Adults rarely read to the children.	Y N	3.1 An adult reads with the children most days.	Y N	5.1 Children take an active role in group reading during which discussion of the words and / or story usually takes place.	Y N	7.1 There is discussion about print and letters as well as content.
		Y N	3.2 Children are encouraged to join in with repetitious elements of the text.	Y N	5.2 Children are encouraged to conjecture about and comment on the text.	Y N	7.2 There is support material for the children to engage with the story by themselves e.g. tapes, flannel board, displays etc.
						Y N	7.3 There is evidence of one to one reading with some children.

	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
1. Natural materials							
Y N	1.1 There is little access inside the centre to natural materials (Ex. plants, rocks, pebbles, fir cones).	Y N	3.1 Some natural materials are available and are accessible to the children indoors.	Y N	5.1 Natural materials are used beyond decoration to illustrate specific concepts (Ex. growth - planting seeds or bulbs).	Y N	7.1 Children are encouraged to identify and explore a wide range of natural phenomena in their environment outside the centre and talk about/describe them.
		Y N	3.2 Natural materials are accessible outdoors, e.g. plants.	Y N	5.2 Through regular activities children are encouraged to explore the characteristics of natural materials (Ex. things that are smooth or rough).	Y N	7.2 Children are encouraged to bring natural objects into the centre.
				Y N	5.3 Adults show appreciation, curiosity and respect for nature when with children (Ex. curiosity and interest rather than fear or disgust about fungi, insects, worms, etc.).	Y N	7.3 Children are encouraged to make close observations of natural objects and/or draw them.

	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7

Diversity : Planning for individual learning needs. Ask to see the records kept on individual children.

Y N	1.1 All children in the setting are offered the same range of materials and activities, rather than having activities matched to their age or aptitude.	Y N	3.1 Some additional provision is made for individuals or groups with specific needs.*	Y N	5.1 The range of activities provided enables children of all abilities and from all backgrounds to participate in a satisfying + cognitively demanding way.***	Y N	7.1 The range of activities provided, together with the organisation of social interaction, enables children of all abilities and backgrounds to participate at an appropriate level in both individual and common tasks.***
Y N	1.2 If planning occurs there is no mention of specific groups or individuals.	Y N	3.2 Some of the planning shows differentiation for particular individuals or groups Ex. simple peg puzzles to complex jigsaws, fat paint brushes to watercolour brushes.	Y N	5.2 Day to day plans are drawn up with the specific aim of developing activities that will satisfy the needs of each of the children either individually or as groups.	Y N	7.2 Planning shows attention to adult participation to individual/paired/group tasks and to the range of levels at which a task or activity may be experienced.
Y N	1.3 If records are kept, they describe activities rather than the child's response or success in that activity.+ Ex. Ticked checklists or sampling of children's work.	Y N	3.3 Children's records indicate some awareness of how individuals have coped with activities, or of the appropriateness of activities +Ex. 'need bilingual support' 'could only manage to count to 3'.	Y N	5.3 Children are observed regularly , and individual records are kept on their progress indifferent aspects of their development+.	Y N	7.3 Children are observed regularly, and their progress is recorded and used to inform planning.
		Y N	3.4 Staff show some awareness of the need to support and recognise children's' differences, by giving praise and public approval to children of all abilities	Y N	5.4 Staff regularly draw attention of individuals to differences in a positive and sensitive manner.	Y N	7.4 Staff regularly draw the attention of the whole group to difference and ability in a positive way.****

Note*= Ex. children of different ages or developmental stage, bilingual support for bilingual children, specific support for children with learning difficulties or a disability.
Note**= Ex. staff demonstrate in playing with children the different tasks which can be attempted with a construction toy, computer game.
Note***= Ex. children of different ages or aptitudes may be paired for a particular task, such as reporting on the weather, selecting stories for a group, exploring a new computer programme, or an adult may focus on working with one group or activity on a particular occasion.
Note****= Ex. show disabled individuals or those with learning difficulties in a positive light or individual capability is celebrated e.g. bilingualism is seen as an asset.

Appendix C.
Tukey H.S.D tests results comparing total ECERS-R scores

Comparison		Mean difference	Std. Error	Significance
Nursery classes	Playgroups	10.7902	1.308	.000
	Private day nurseries	6.1791	1.335	.000
	Local authority centres	2.1078	1.419	.674
	Nursery schools	-3.1324	1.490	.286
	Combined centres	-2.7432	2.258	.830
Playgroups	Nursery classes	-10.7902	1.308	.000
	Private day nurseries	-4.6111	1.233	.003
	Local authority centres	-8.6824	1.324	.000
	Nursery schools	-13.9226	1.400	.000
	Combined centres	-13.5334	2.199	.000
Private day nurseries	Nursery classes	-6.1791	1.335	.000
	Playgroups	4.6111	1.233	.003
	Local authority centres	-4.0713	1.350	.031
	Nursery schools	-9.3115	1.424	.000
	Combined centres	-8.9223	2.215	.001
Local authority centres	Nursery classes	-2.1078	1.419	.674
	Playgroups	8.6824	1.324	.000
	Private day nurseries	4.0713	1.350	.031
	Nursery schools	-5.2402	1.504	.007
	Combined centres	-4.8510	2.267	.267
Nursery schools	Nursery classes	3.1324	1.490	.286
	Playgroups	13.9226	1.400	.000
	Private day nurseries	9.3115	1.424	.000
	Local authority centres	5.2402	1.504	.007
	Combined centres	.3892	2.312	1.000
Combined centres	Nursery classes	2.7432	2.258	.830
	Playgroups	13.5334	2.199	.000
	Private day nurseries	8.9223	2.215	.001
	Local authority centres	4.8510	2.267	.267
	Nursery schools	-.3892	2.312	1.000

Appendix D.
ANOVA tests results comparing ECERS-R sub-scale scores by type of provision

Sub-scale	DF	F value	Significance
Space and furnishings	5,153	24.24	.00
Personal care practices	5,153	1.72	.14
Language and reasoning	5,153	16.93	.00
Pre-school activities	5,153	41.87	.00
Social Interaction	5,153	6.54	.00
Organisation and routines	5,153	15.75	.00
Adults working together	5,153	44.97	.00

Appendix E.
Tukey H.S.D tests results comparing total ECERS-E scores

Comparison		Mean difference	Std. Error	Significance
Nursery classes	Playgroups	6.2816	.718	.000
	Private day nurseries	3.4165	.733	.000
	Local authority centres	2.1656	.779	.061
	Nursery schools	-1.2625	.818	.636
	Combined centres	-2.6178	1.239	.281
Playgroups	Nursery classes	-6.2816	.718	.000
	Private day nurseries	-2.8651	.677	.000
	Local authority centres	-4.1160	.727	.000
	Nursery schools	-7.5441	.768	.000
	Combined centres	-8.8993	1.207	.000
Private day nurseries	Nursery classes	-3.4165	.733	.000
	Playgroups	2.8651	.677	.000
	Local authority centres	-1.2509	.741	.540
	Nursery schools	-4.6790	.782	.000
	Combined centres	-6.0342	1.216	.000
Local authority centres	Nursery classes	-2.1656	.779	.061
	Playgroups	4.1160	.727	.000
	Private day nurseries	1.2509	.741	.540
	Nursery schools	-3.4281	.825	.000
	Combined centres	-4.7833	1.244	.002
Nursery schools	Nursery classes	1.2625	.818	.636
	Playgroups	7.5441	.768	.000
	Private day nurseries	4.6790	.782	.000
	Local authority centres	3.4281	.825	.000
	Combined centres	-1.3553	1.269	.894
Combined centres	Nursery classes	2.6178	1.239	.281
	Playgroups	8.8993	1.207	.000
	Private day nurseries	6.0342	1.216	.000
	Local authority centres	4.7833	1.244	.002
	Nursery schools	1.3553	1.269	.894

Appendix F.
ANOVA tests results comparing ECERS-E sub-scale scores by type of provision

Sub-scale	DF	F value	Significance
Literacy	5,135	28.55	.00
Mathematics	5,153	12.24	.00
Diversity	5,135	15.73	.00
Kruskal-Wallis test (non-parametric)	**DF**	**Chi sq.**	**Significance**
Science and environment	5	65.22	.00

Appendix G. Bar charts to compare ECERS-R total and sub-scale scores of Grouping A and Grouping B

Figure G1. Total ECERS scores by Grouping A (top) and Grouping B (bottom)

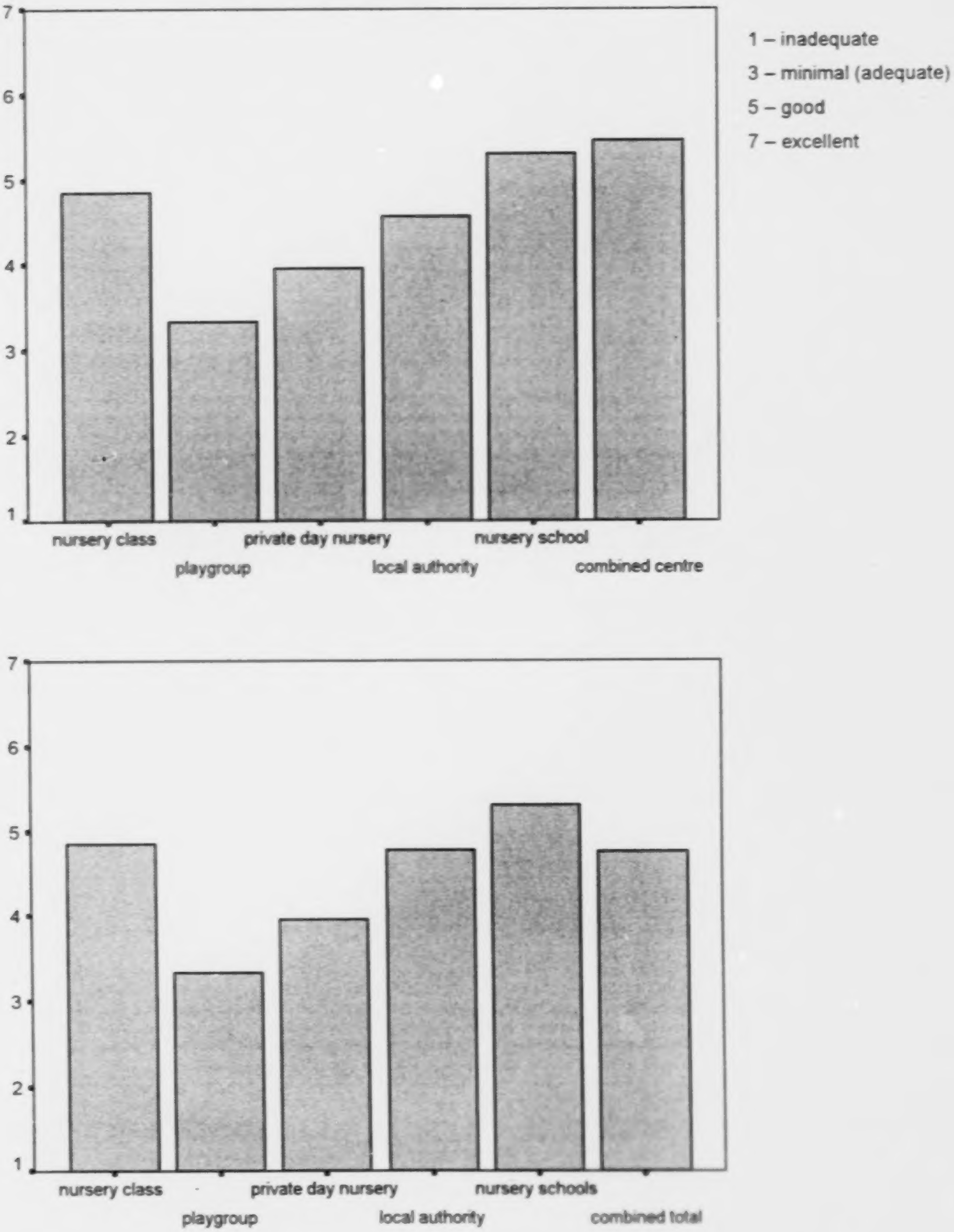


Figure G2. ECERS-R space and furnishings sub-scale by grouping A (top) and Grouping B (bottom)

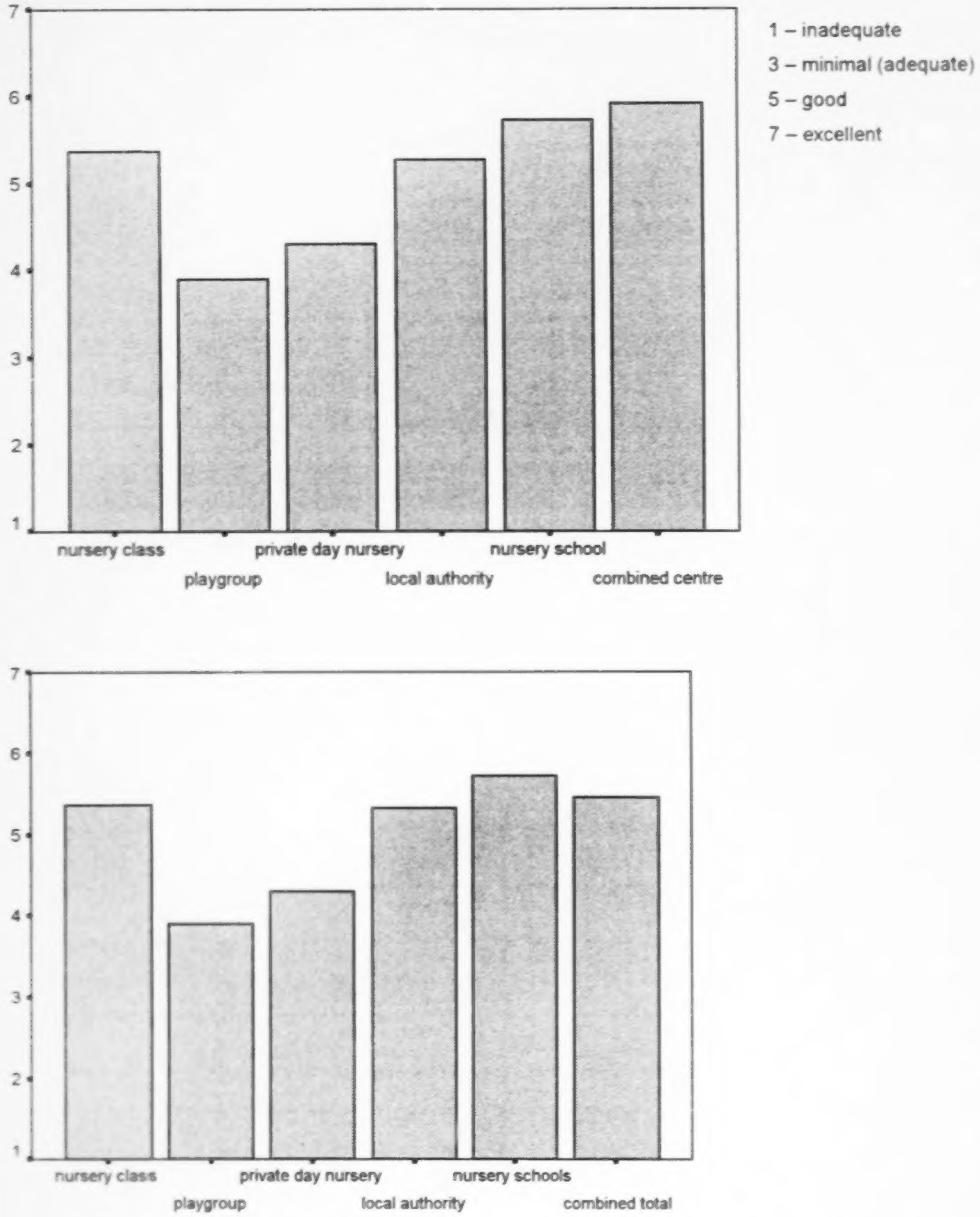


Figure G3. ECERS-R Personal care practices sub-scale by Grouping A (top) and Grouping (B)

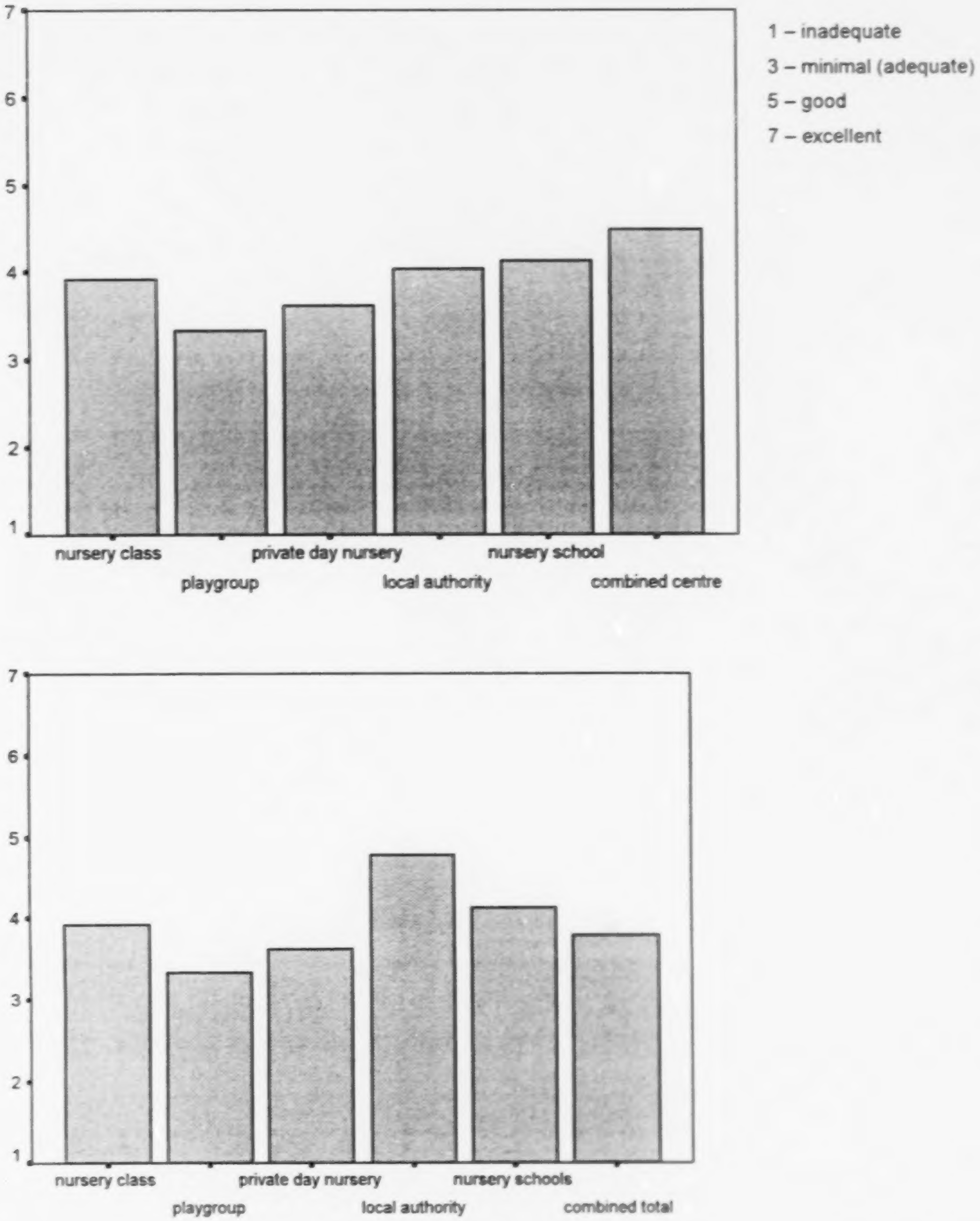


Figure G4. ECERS-R language and reasoning sub-scale by Grouping A (top) and Grouping B (bottom)

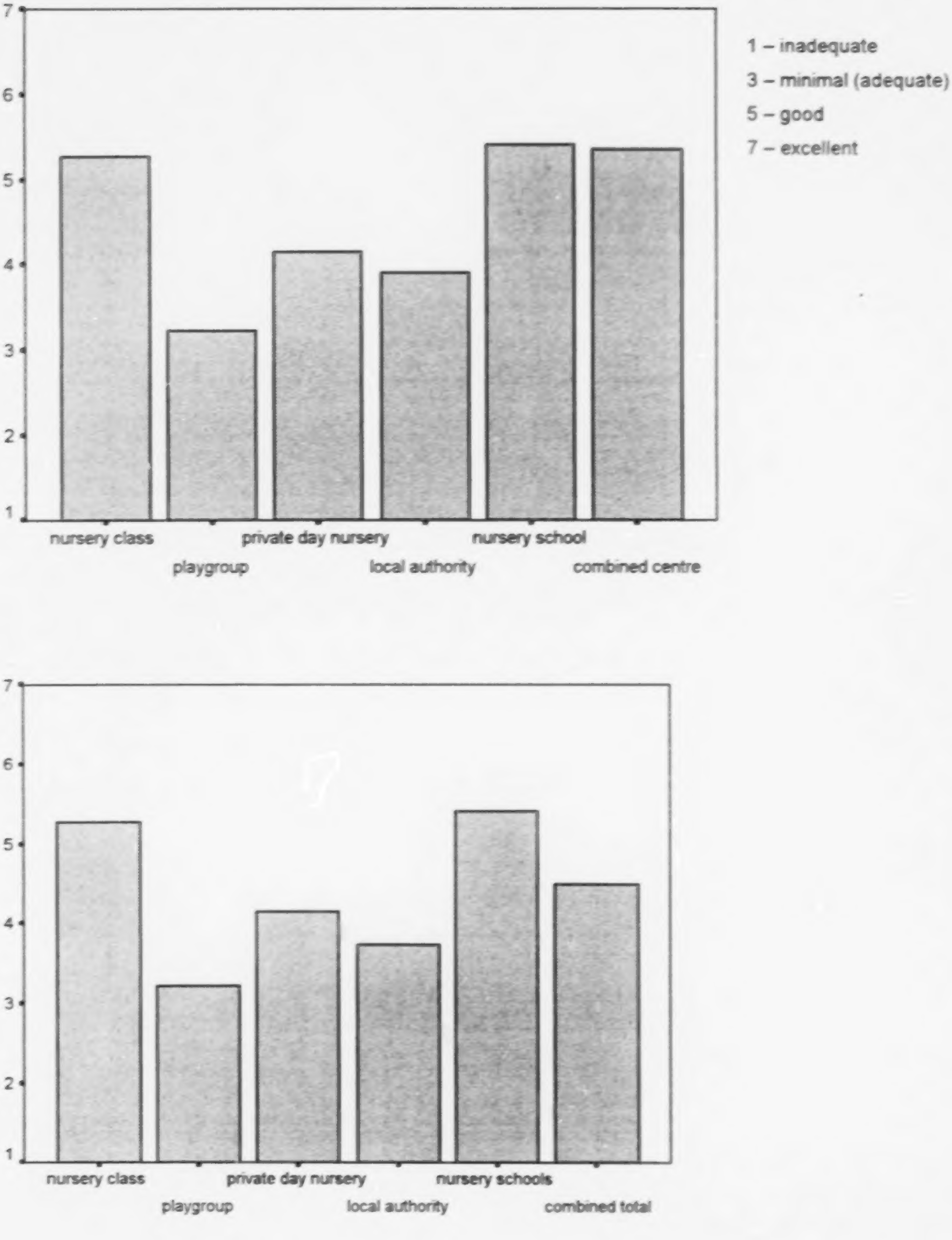


Figure G5. ECERS-R Pre-school activities sub-scale by Grouping A (top) and Grouping B (bottom)

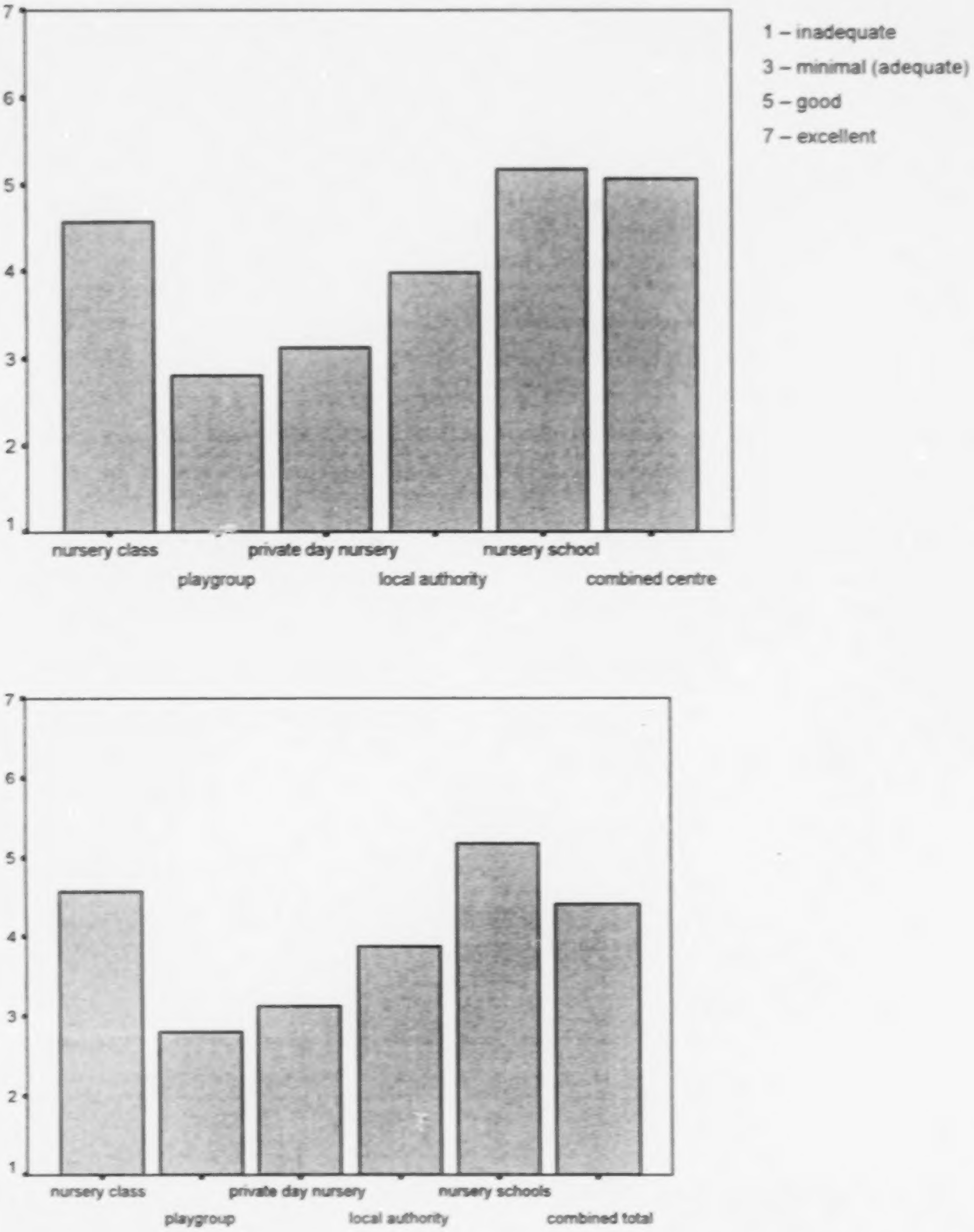


Figure G6. ECERS-R Social interaction sub-scale by Grouping A (top) and Grouping B (bottom)

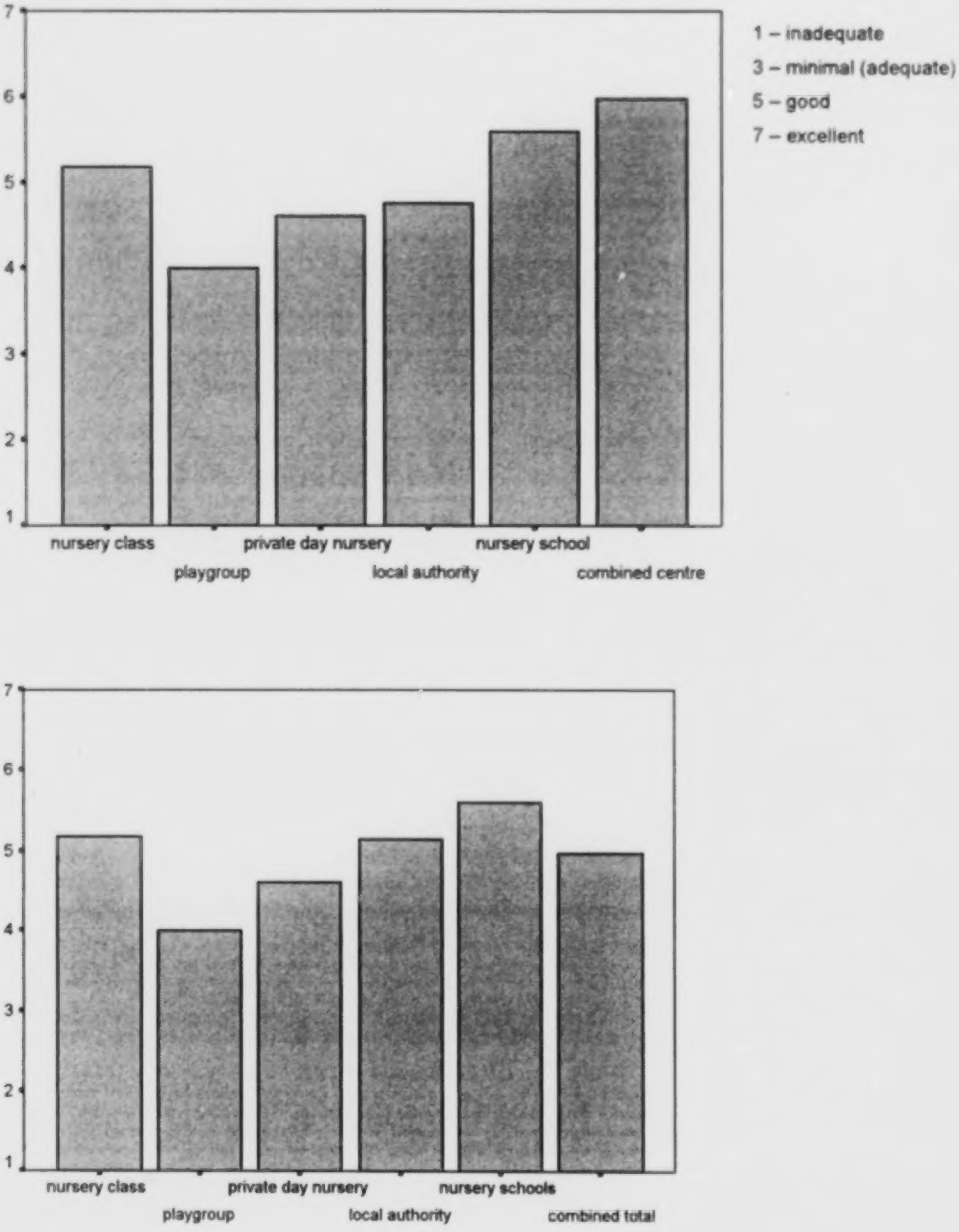
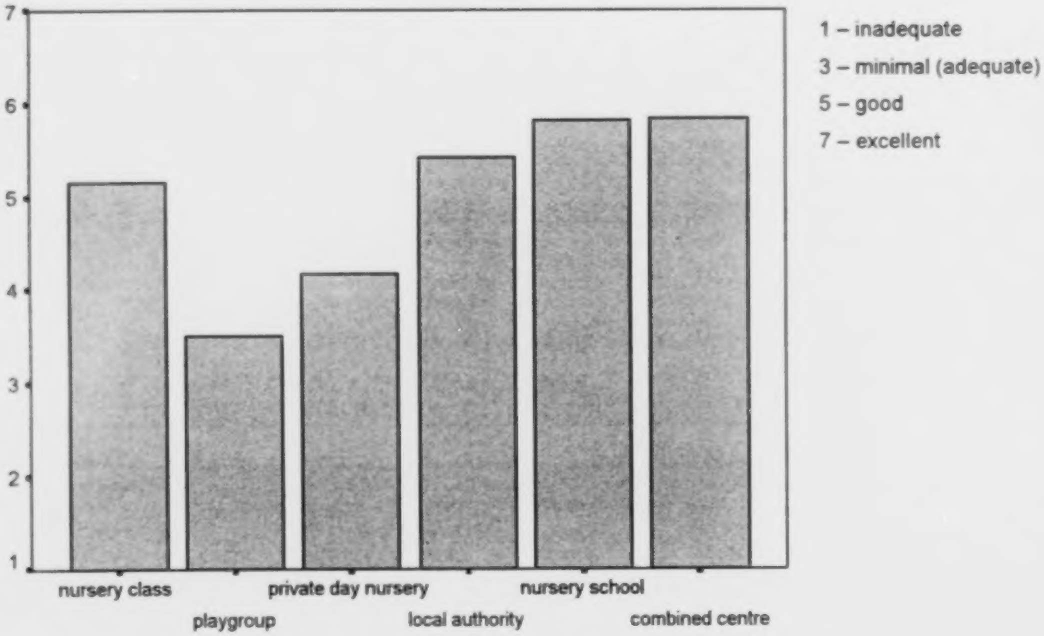


Figure G7. ECERS-R Organisation and routine sub-scale by Grouping A (top) and Grouping B (bottom)



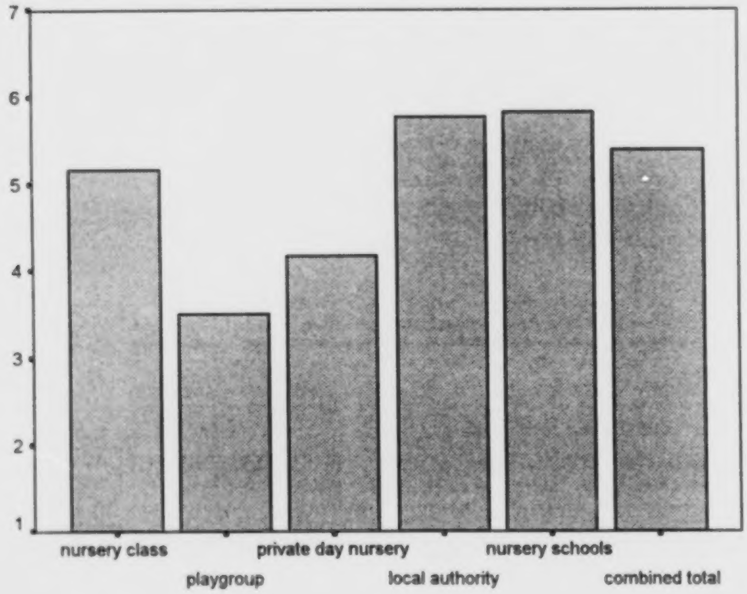
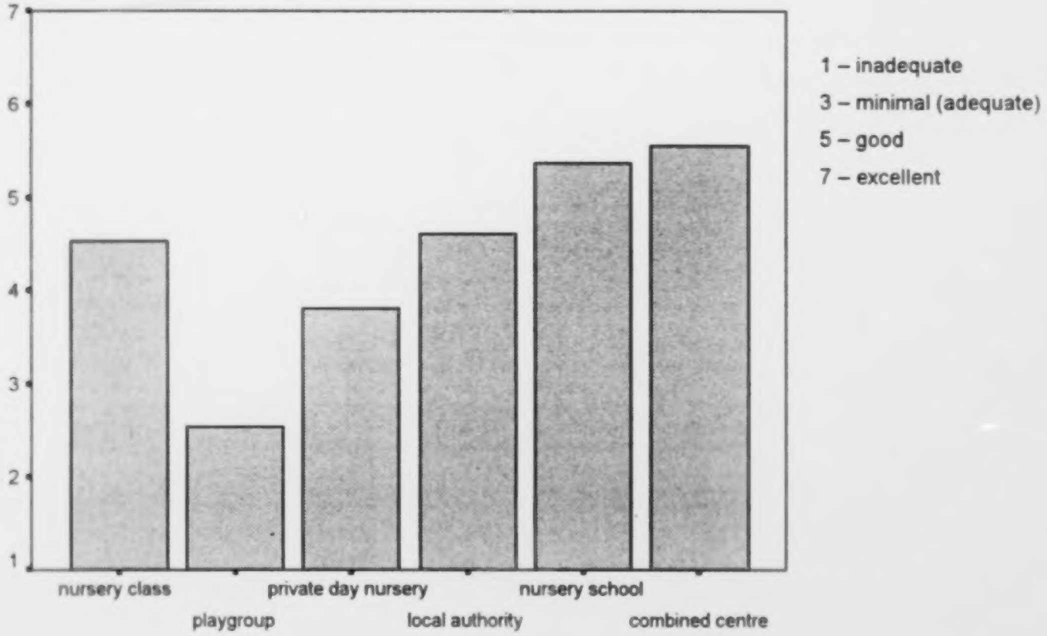
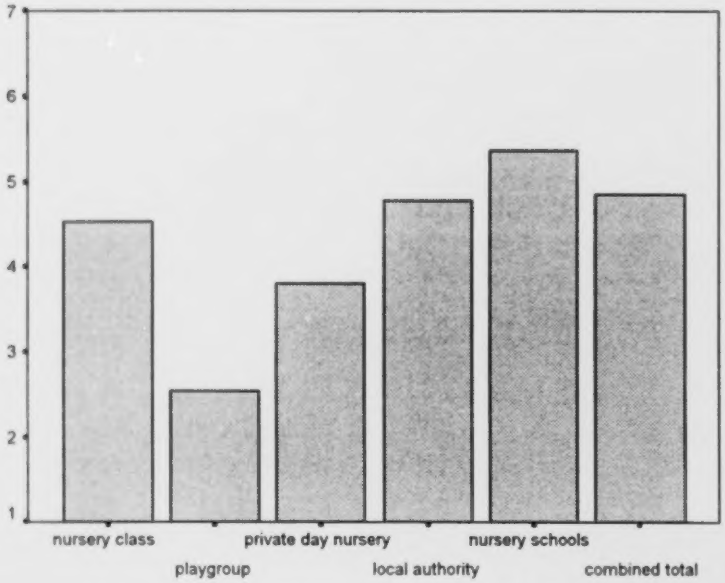


Figure G8. ECERS-R Adults working together sub-scale by Grouping A (top) and Grouping B (bottom)

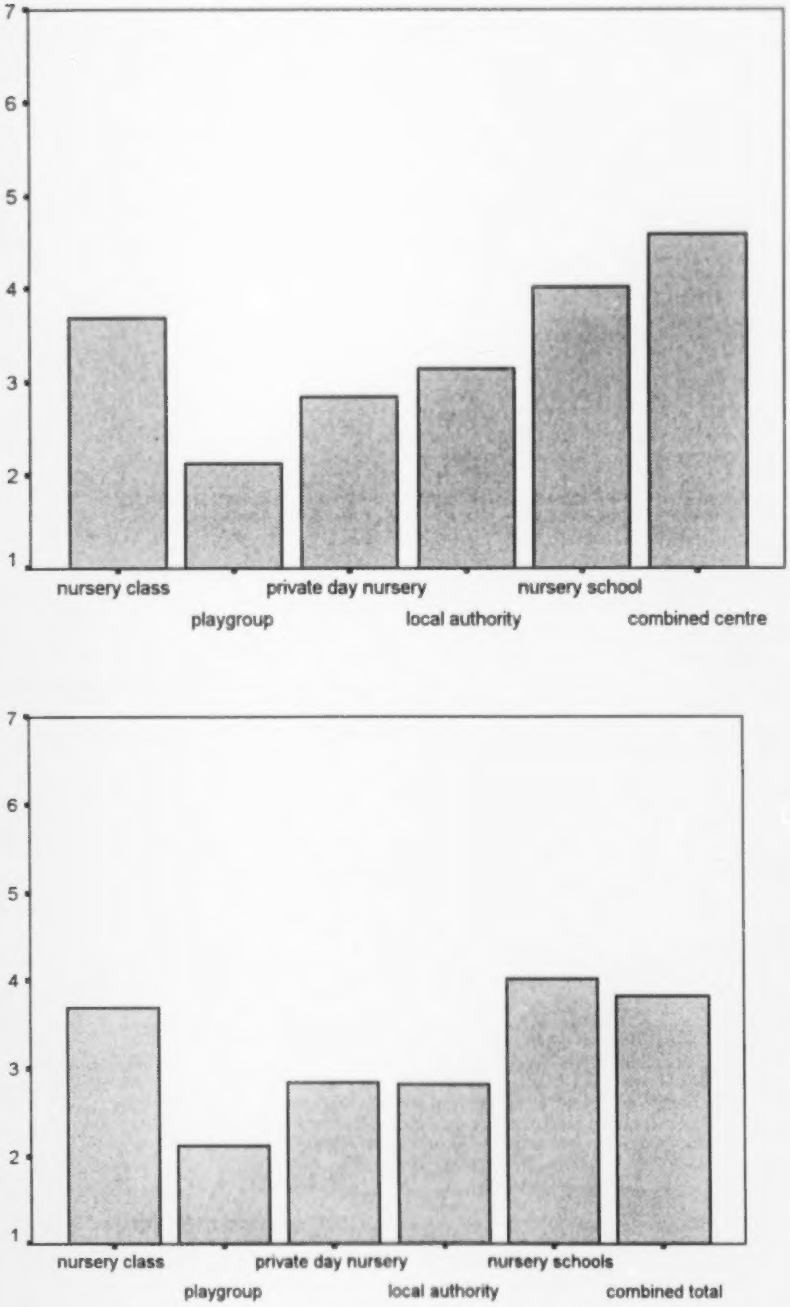




Appendix H.

Bar charts to compare ECERS-E total and sub-scale scores of Grouping A and Grouping B

Figure H1. Total ECERS-E scores by grouping A (top) and Grouping B (bottom)



1 – inadequate
3 – minimal (adequate)
5 – good
7 – excellent

Figure H2. ECERS-E literacy sub-scale by Grouping A (top) and Grouping B (bottom)

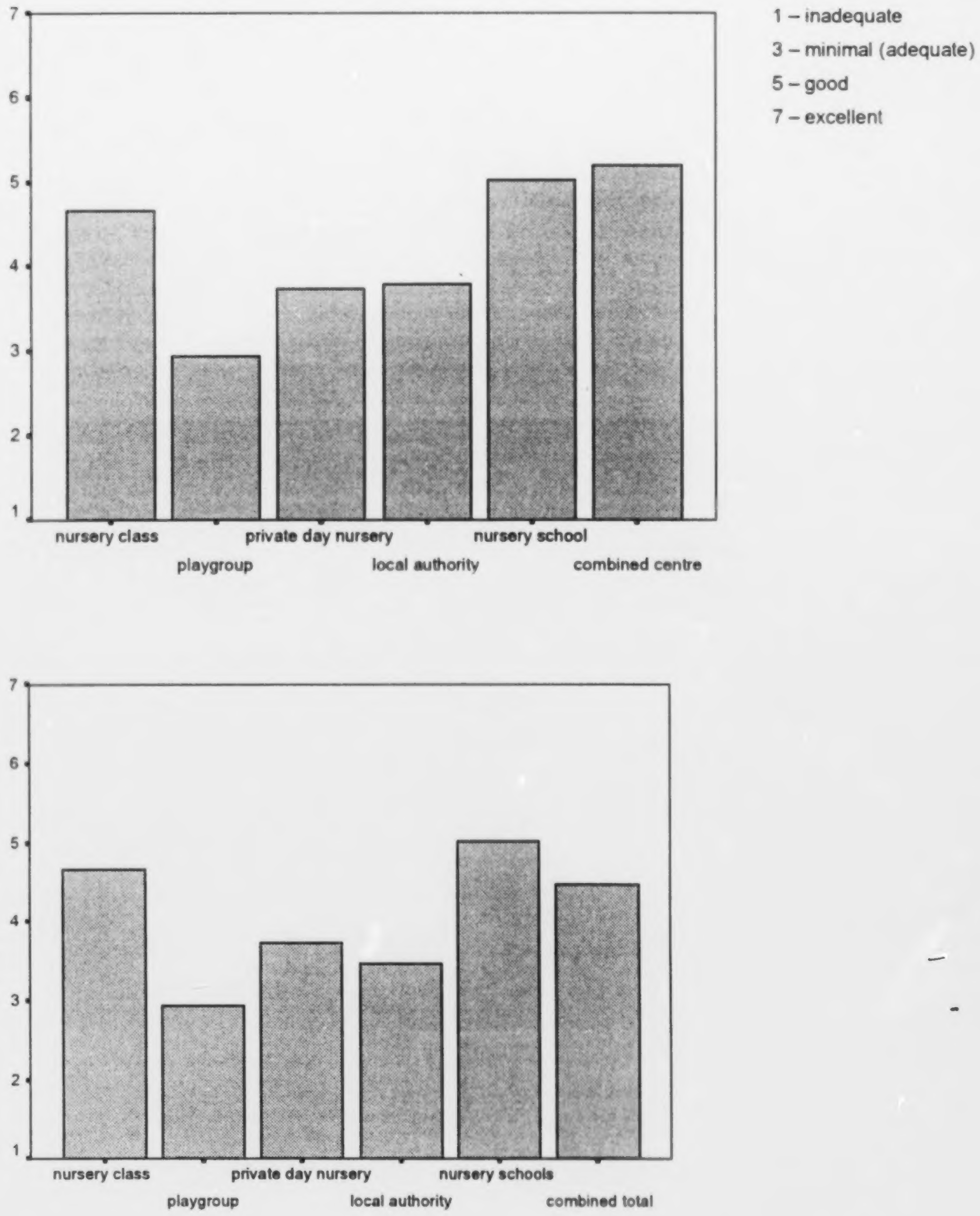
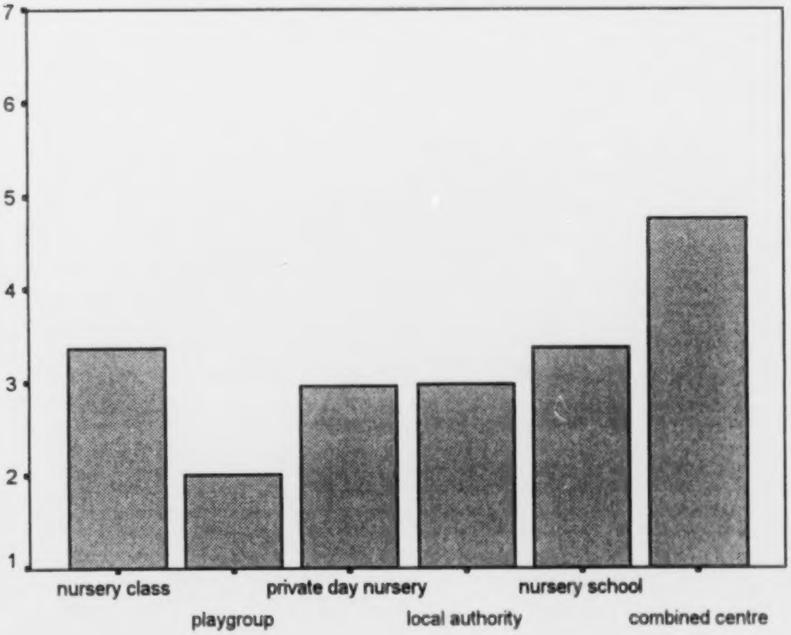


Figure H3. ECERS-E mathematics sub-scale by Grouping A (top) and Grouping B (bottom)



1 – inadequate
3 – minimal (adequate)
5 – good
7 – excellent

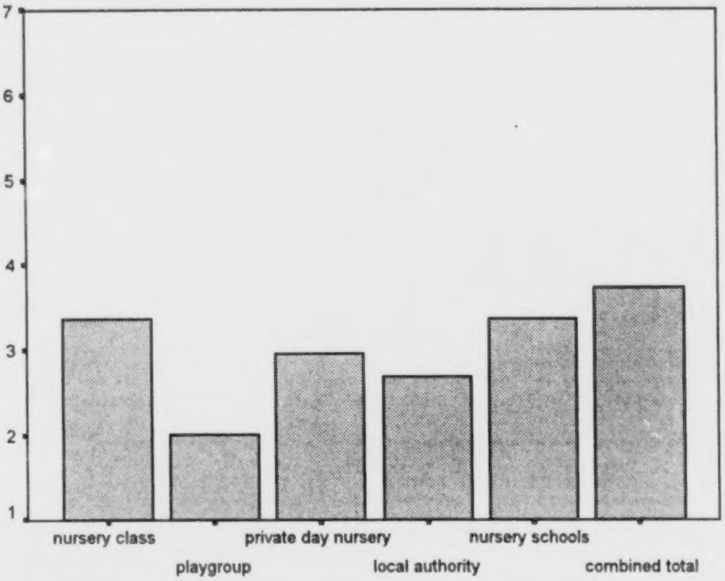


Figure H4. ECERS-E science and environment sub-scale by Grouping A (top) and Grouping B (bottom)

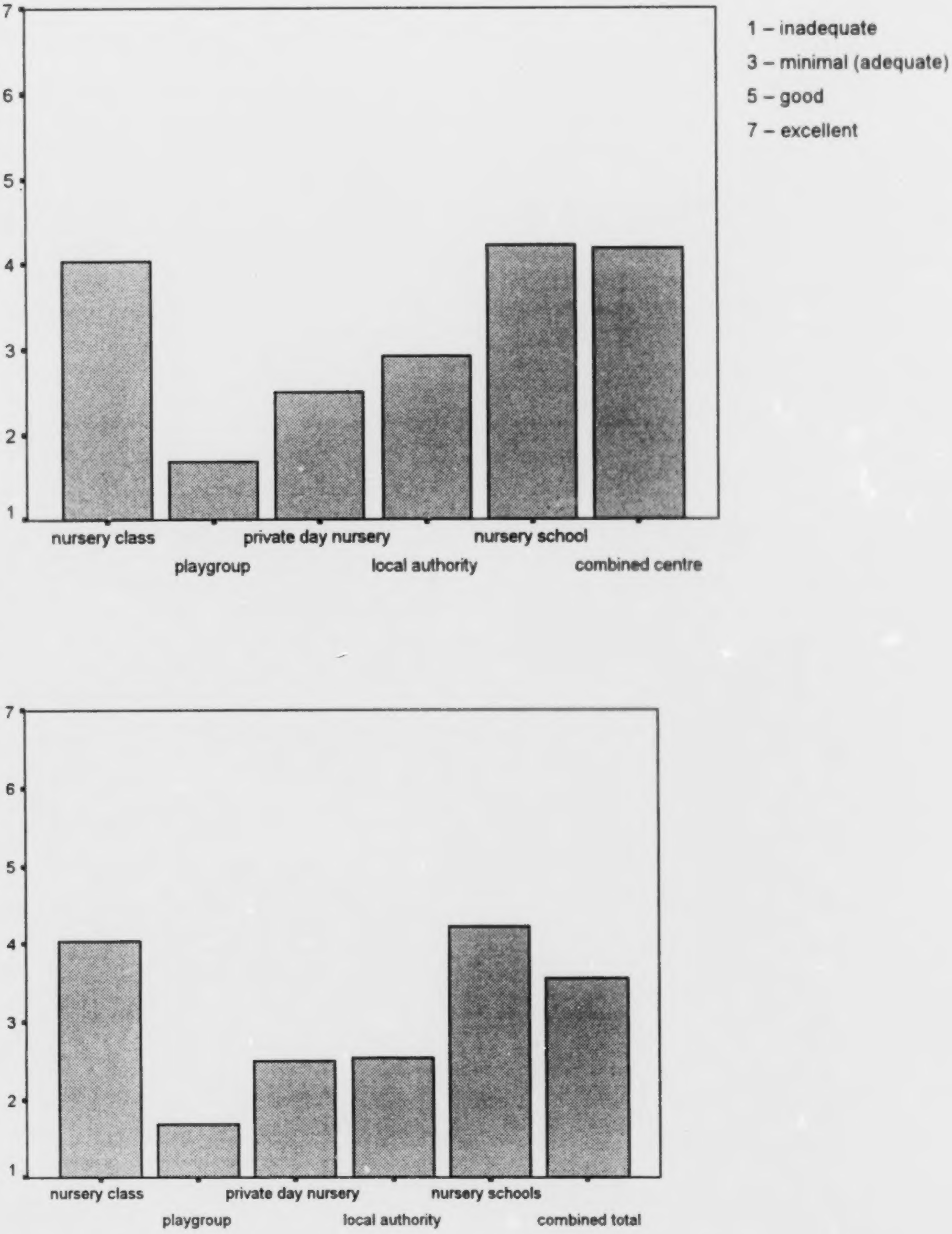
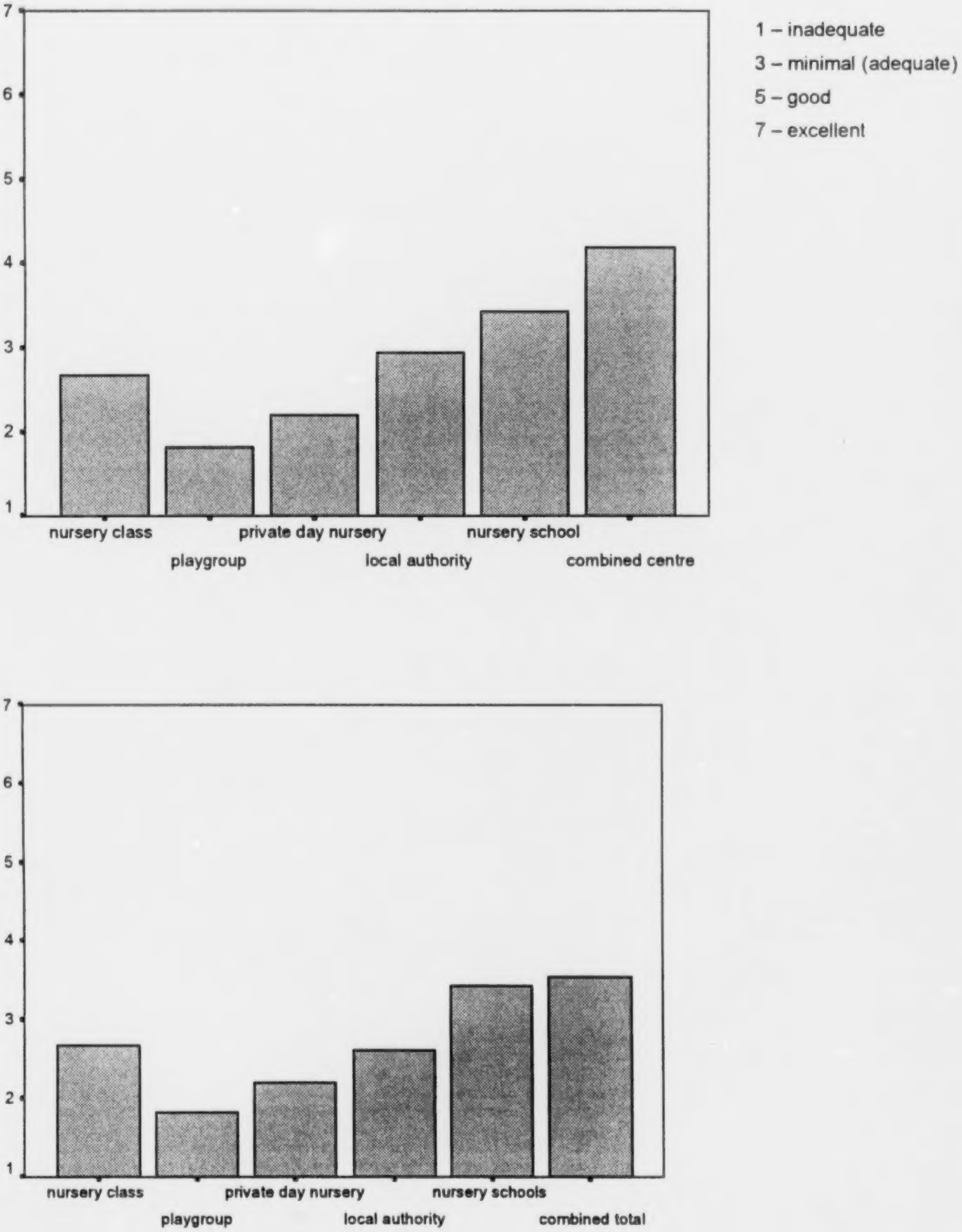


Figure H5. ECERS-E diversity sub-scale by Grouping A (top) and Grouping B (bottom)



Appendix I. ECERS-R Factor Analysis

ECERS varimax rotated component matrix

Item	Component	
	1	2
score for sand/water	.762	.109
score for opportunities for professional growth	.736	.280
score for art	.724	-5.003E-02
score for child-related display	.711	.212
score for blocks	.656	.102
score for provision for professional needs of staff	.619	.241
score for provision for personal needs of staff	.608	.117
score for nature/science	.589	.310
score for maths/number	.586	.292
score for gross motor equipment	.572	-9.090E-02
score for free play	.572	.473
score for supervision and evaluation of staff	.564	.227
score for fine motor	.555	.374
score for dramatic play	.521	.105
score for space for gross motor activity	.491	.206
score for space for privacy	.491	-3.910E-03
score for music/movement	.480	.225
score for books & pictures	.456	.328
score for schedule	.440	.261
score for group time	.436	.397
score for promoting acceptance of diversity	.429	.270
score for provisions for parents	.415	.102
score for furniture for care	.409	.193
score for indoor space	.351*	.136*
score for furnishings for relaxation	.283*	.265*
score for general supervision of children	-6.513E-03	.816
score for discipline	.193	.807
score for staff – child interactions	.243	.742
score for informal use of language	.300	.741
score for using language to develop reasoning skills	.408	.661
score for interactions among children	.368	.645
score for staff interaction and co-operation	.352	.582
score for encouraging children to communicate	.519	.565
score for health practices	6.016E-02	.505
score for safety practices	.149	.492
score for supervision of gross motor activities	.105	.455
score for room arrangement	.250	.426
score for greeting/departing	-4.595E-02	.418
score for toileting/diapering	1.677E-02	.384
score for meals/snacks	.226	.289

Appendix J. ECERS-E Factor Analysis

ECERS-E varimax rotated component matrix

Item	Component	
	1	2
Score for 'environmental print' letters and words	.684	.371
Score for natural materials	.683	.314
Score for counting	.678	.122
Score for science resourcing	.656	.246
Score for talking and listening	.649	.229
Score for sounds in words	.634	-.269
Score for adult reading with child	.585	.270
Score for emergent writing and mark making	.538	.462
Score for reading and writing simple numbers	.530	6.259E-02
Score for individual learning needs	.512	.359
Score for gender equity	3.972E-02	.763
Score for multicultural education	.127	.702
Score for book and literacy	.339	.643

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Technical Paper 6a

Characteristics of Pre-School Environments

A Longitudinal Study funded by the DfEE
1997-2003

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Technical Paper 6A
CHARACTERISTICS OF PRE-SCHOOL ENVIRONMENTS

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Contents

Page Number

Executive Summary i

Assessing Pre-School Environments 1

Methods 2

- Rating Scales: the Early Childhood Environment Rating Scale (ECERS) and the English Extension (ECERS-E) 3
- Reliability of our observations 4
- Sample of regions and centres 4
- Summary of the different types of provision 4

Results 6

- A 'snapshot' of educational and care provision 6
- The profile of pre-school environments according to type of provision 7
- Curricular dimensions in ECERS-E 13
- Focus on combined centres 15
- Was there variation within type of provision? 15

The Relationship Between ECERS and ECERS-E 17

Looking for 'Themes' in the Rating Scales 17

- Global dimensions of quality 17
- Comparison between types of provision on the two dimensions 18

Discussion 19

References 21

Appendix A 22

Characteristics of Pre-school Environments

EXECUTIVE SUMMARY

The EPPE project investigates the characteristics of early childhood education and care through a variety of research methods; this paper reports on just two instruments. A 'centre profile' was created for each centre through systematic observation and questions to staff. The Early Childhood Environment Rating Scale: Revised (ECERS) was used in drawing up each centre's profile along with an extension to it based on the Desirable Learning Outcomes (ECERS-English Extension). The ECERS rating scales consisted of eleven sub-scales with a range of items describing 'quality' of provision. Each item was rated 1 (inadequate) to 7 (excellent). The ECERS and ECERS-E are one approach to describing the 'processes' through which children are cared for and educated.

There are other important sources of information excluded here such as adult–child ratio, unit cost per child, and management of the centre. A fuller analysis of centres in the EPPE research will require the linking of the findings reported here with parent interview data, centre manager interview data and child outcome data when children enter reception class. This will occur in later papers in this series.

This paper describes the characteristics of the 141 centres used by 3 and 4 year-old children in the EPPE sample. Averaged across all the centres, provision in the sample approached 'good' on the ECERS but the curricular profile developed for England (ECERS-E) showed that the learning opportunities in maths and science were limited and sometimes inadequate. However overall scores on ECERS indicate similar quality for much provision in England with that in other industrialised countries.

Considering type of provision, the LEA centres (nursery schools, nursery classes and nursery schools combined with care) had scores in the good-to-excellent range. Social services daycare were next, nearing the good range. However the playgroups and private day nurseries were consistently found to have scores in the 'minimal/adequate' range. These differences in quality are similar to recent Ofsted reports on variation in the quality of pre-school provision (Ofsted, 1999) and to a recent study using ECERS on 44 pre-school centres in London by Lera et al. (1996).

This large sample of pre-school centres from different regions in England shows great variation in the curriculum and care on offer, the pedagogical strategies seen in interactions between children and staff, and in the resources available for children's play and learning. Comparisons between types suggest that a ratio of 1:8 as found in the private and voluntary sector do not guarantee high standards by themselves and that ratios of 1:13 in the LEA sector are not associated with low quality. However, the issue of ratio is inevitably confounded with type of preschool and other variation associated with type.

Although centres offering full day care generally had lower ratings than those on a sessional basis, the LEA nursery schools which had changed from 'education only' to centres offering full day care and encouragement of parental involvement usually scored highest of all. Further it appeared that adding 'education' to more traditional local authority day care settings (usually one teacher or a peripatetic teacher) is not associated with higher quality. This implies that there is still some way to go before the ideal of combined education and care can be achieved and that the training of all staff is important.

ASSESSING PRE-SCHOOL ENVIRONMENTS

Researchers have been debating for years about the concept of 'quality' in early childhood education and care. Judgment of quality involves values and what is a 'high quality' centre to one parent may be quite low in the eyes of a local authority officer or indeed another parent. Munton et al. (1995) identified three basic dimensions in describing the early years setting. These are the **structure** which includes both facilities and human resources; the educational and care **processes** which children experience every day; and the **outcomes** or the longer term consequences of the education and care the child receives. The observational measures described in this technical paper focus on educational and care processes but also includes some structure in their description of quality. That dimension of quality which relates to the **outcomes** for children will be addressed in later papers in the EPPE series.

One of the most widely used observational measures for describing the characteristics of early childhood education and care is the **Early Childhood Environment Rating Scale** (ECERS, now revised; Harms, Clifford & Cryer 1998). The revised ECERS has 43 items which are divided into 7 sub-scales. These sub-scales are space and furnishing, personal care routines, language and reasoning, activities, social interactions, organisation and routines, adults workng together. Each item is rated on a 7 point scale (1 = inadequate, 3 = minimal/adequate, 5 = good, 7 = excellent). Completion of the ECERS usually involves approximately one day of observation, as well as talking to the staff about aspects of the routine which were not visible during the observation session (for example, weekly swimming or seasonal outings).

In the EPPE study, the ECERS was supplemented by a new rating scale (ECERS-Extension, Sylva et al 1998), devised by the EPPE team based on the Desirable Learning Outcomes for 3 and 4 year-olds and pedagogical practices associated with it (Siraj-Blatchford and Wong 1999). Because the ECERS was developed in the United States of America and intended for use in both care and educational settings, the EPPE team thought it necessary to devise a second early childhood environment rating scale which was focused on provision in Britain as well as good practice in catering for diversity (Sylva et al 1998). The ECERS-E was devised after wide consultation with experts and extensively piloted. The ECERS-E consists of 4 sub-scales: literacy, mathematics, science and environment, and diversity. Both the ECERS and the ECERS-E will be described as they were applied in 141 pre-school settings across five regions in England.

Both ECERS ratings were carried out by a senior research officer responsible for the region. The research officers had, in every instance, experience of assessing children for at least 6 months in the centre before carrying out the ECERS observation and ratings. Moreover, each observer put aside a full day to complete the ECERS. This was necessary because the two rating scales contained very detailed information about curricular provision, pedagogy, planning, resources and relationships.

METHODS

Rating Scales: the Early Childhood Environment Rating Scale (ECERS) and the English Extension (ECERS-E)

Each pre-school centre was assessed using the ECERS and its extension. The ECERS consists of 7 sub-scales; each sub-scale is composed of 4-10 individual items which describe the 'quality' of provision along a continuum centred on materials, facilities, pedagogy or social interactions.

Space and furnishings – items 1-8
Personal care routines – items 9-14
Language and reasoning – items 15-18
Pre-school activities – items 19-28
Social interaction – items 29-33
Organisation and routines – items 34-37
Adults working together – items 38-43

The ECERS-E consists of 4 sub-scales:

Literacy – items 1-6
Mathematics – items 7-10
Science and environment – items 11-13
Diversity – items 14-16

The structure of the two environmental scales is described below and examples of individual items in the ECERS and ECERS-E appear in Appendix A.

Structure of the Environmental Rating Scale

I. **Space and furnishings**
   1. Indoor space
   2. Furniture for routine care, play and learning
   3. Furnishings for relaxation and comfort
   4. Room arrangement for play
   5. Space for privacy
   6. Child related display
   7. Space for gross motor
   8. Gross motor equipment

II. **Personal care practices**
   9. Greeting/departing
   10. Meals/snacks
   11. Nap/rest
   12. Toileting/diapering
   13. Health practices
   14. Safety practice

III. **Language and reasoning**
   15. Books and pictures
   16. Encouraging children to communicate
   17. Using language to develop reasoning skills
   18. Informal use of language

IV. **Pre-school activities**
   19. Fine motor
   20. Art
   21. Music/movement
   22. Blocks
   23. Sand/water
   24. Dramatic play
   25. Nature/science
   26. Math/number
   27. Use of TV, video, and/or computers
   28. Promoting acceptance of diversity

V. **Social interaction**
   29. Supervision of gross motor activities
   30. General supervision of children (other than gross motor)
   31. Discipline
   32. Staff-child interactions
   33. Interactions among children

VI. **Organisation and routines**
   34. Schedule
   35. Free play (free choice)
   36. Group time
   37. Provisions for children with disabilities

VII. **Adults working together**
   38. Provisions for parents
   39. Provisions for personal needs of staff
   40. Provisions for professional needs of staff
   41. Staff interaction and cooperation
   42. Supervision and evaluation of staff
   43. Opportunities for professional growth

(Harms, T., Clifford, M. & Cryer, D., 1998)

Structure of the Environmental Rating Scale - Extension

I. **Literacy**
   1. 'Environmental print': Letters and words
   2. Book and literacy areas
   3. Adult reading with the children
   4. Sounds in words
   5. Emergent writing/mark making
   6. Talking and Listening

II. **Mathematics**
   7. Counting and the application of counting
   8. Reading and writing simple numbers
   9a. Mathematical Activities: Shape and space (select either 9a or 9b for evidence; choose the one which you observed most)
   9b. Mathematical Activities: Sorting, matching and comparing

III. **Science and Environment**
   10. Natural materials
   11. Areas featuring science/science resources
   12a. Science Activities: Science processes: Non Living (select one of a, b, c for evidence; choose one you observed most)
   12b. Science Activities: Science processes: Living processes and the world around us
   12c. Science Acitivities: Science processes: Food preparation

IV. **Diversity**
   13. Individual learning needs
   14. Gender equity
   15. Multicultural Education

(Sylva, K., Siraj-Blatchford, I., Taggart, B., & Colman, P., 1998)

Reliability of our observations

Before using observational rating scales in research it is necessary to establish inter-observer agreement. Good levels of agreement depend on a sound choice of instruments and good researcher training. EPPE observers spent many days in each centre before formal observation began. All research officers were trained extensively on the observational instruments and research officer from the University of Cardiff acted as the 'standard' in a reliability exercise. In each region five centres were observed by the regional research officer and the person acting as 'standard'. Each centre was observed and rated over the course of a whole day. At the end of the day the two observers who had independently scored the ECERS and ECERS-E compared their scores on the same observations. Hence reliability was established for two instruments in 25 centres chosen randomly throughout the regions.The results of this exercise indicated good to excellent inter-observer reliability in all regions. (Kappa range = .75-.90, median = .81). Such high levels of inter-observer reliability demonstrate accuracy and objectivity of ratings across settings and regions.

Sample of regions and centres

The five regions in EPPE were strategically chosen to represent urban, suburban, and rural areas and also to include neighbourhoods with social and ethnic diversity. All local authorities in the EPPE sample were divided into five sampling areas, usually geographic divisions that already existed. Official lists of playgroups, nursery classes, nursery schools, private day nurseries, social services/voluntary day nurseries, and nursery schools combining care and education were obtained with the help of the local early years co-ordinators in every authority. Within each sampling area, one of each type of provision was randomly selected, yielding approximately 25 centres of various types in each region. Some over- and under-sampling occurred in each category of provision because not all authorities had sufficient numbers of local authority day nurseries. The ECERS observations were carried out in each of the 141 centres in the full EPPE sample in the period May 1998 – June 1999.

Summary of the different types of provision

For the main analysis pre-schools were divided into six types.

1. Local Education Authority nursery classes (n=25)
   These are part of primary schools, have an adult:child ratio of 1:13, (one in every two adults is normally a 4 year graduate qualified teacher and the other adult has had 2 years childcare training) and usually offer only half-day sessions in term time, 5 days/week.

2. Voluntary playgroups and/or pre-schools (n=34)
   These have an adult:child ratio of 1:8, (training of adults is variable from none to graduate level. The most common type of training is based on short Pre-school Learning Alliance courses). All offer sessional provision in term time. Many children attend fewer then 5 days/week. Playgroups usually have fewer resources (facilities, materials and sole use of space) than other types of centres.

3. Private day nurseries (n=31)
   These have an adult:child ratio of 1:8, (normally the adults have a two year childcare training, but some have less training). All offer full day care for payment.

4. Local authority (day care) centres (n=24)
   These came from the social services day care tradition, although in recent years many

have come under the authority of the LEA. Thirteen in this group combined care and education with one teacher percentre or a peripatetic teacher shared with othercentres. 11 centres have not officially incorporated education into care. The ratio is 1:8, (normally the adults have a two year childcare training. The combinedcentres have a small input from a teacher), and all offer full day care.

5. Nursery schools (n=20)
   These are 'traditional' nursery schools under the LEA withadult:child ratios of 1:13, (the headteacher would be a 4 year graduate qualified teacher with an early years background, other staff would reflect nursery classes in training), usually offering half-day provision. One in this group was an 'Early Excellence Centre'.

6. Nursery schools combining education and care (n=7)
   These are similar to nursery schools but have developed their provision of extended care to include full day care and parent involvement. They would haveadult:child ratio of 1:13, (staffing would be the same as nursery schools for the over 3s). Even though these centres were chosen as a stratified random sample four in this group were 'Early Excellence Centres'.

RESULTS

A 'snapshot' of educational and care provision

The distribution of scores in the ECERS and ECERS-E was normal and allowed us to carry out powerful statistical tests to identify significant differences.

Figure 1 shows the means for the ECERS and the new scale based on Desirable Learning Outcomes, ECERS-E. The ECERS scores tend towards the top of the 'adequate' range and sometimes approach 'good'. The ECERS-E scores are more disappointing with provision for mathematics, science and diversity hovering around 'minimal' ratings. Note that these means are not weighted by proportion of children attending each type of provision.

Figure 1. Mean ECERS and ECERS-E scores

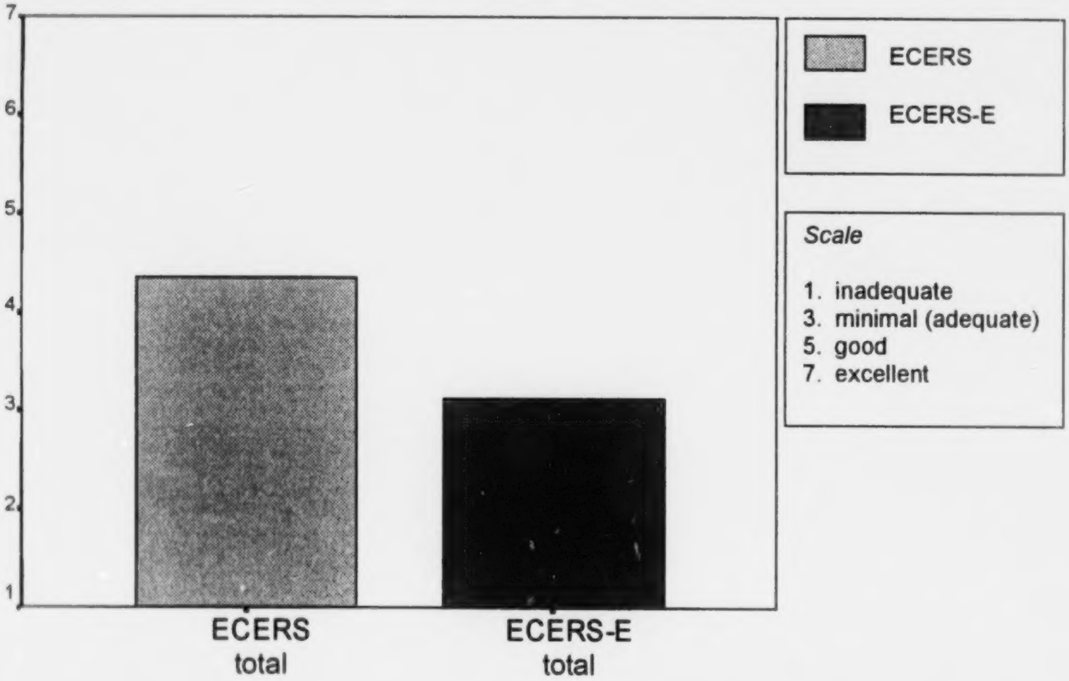
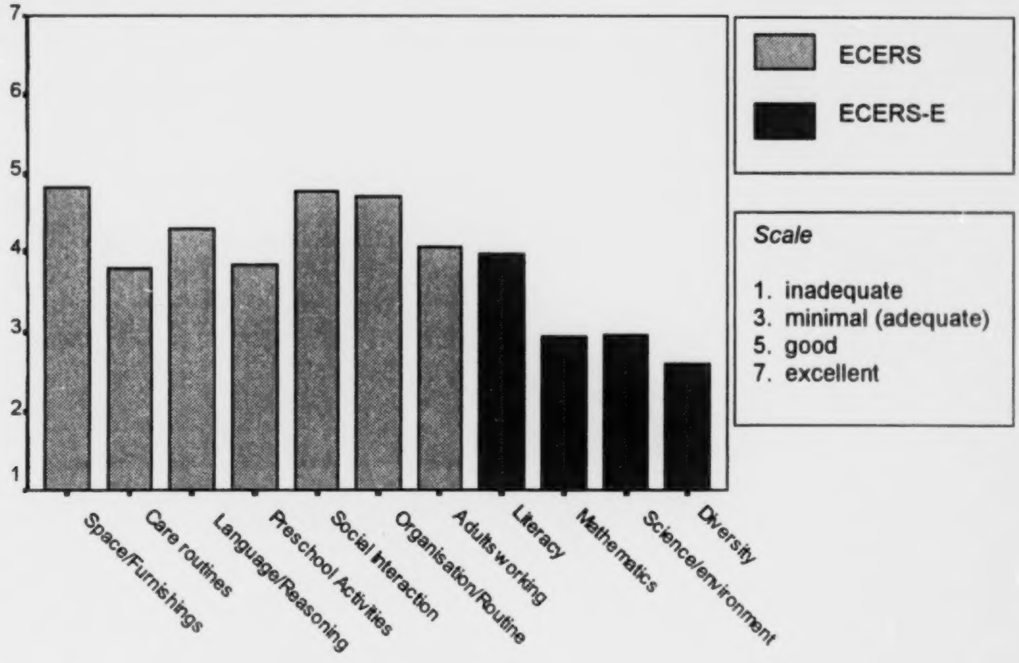


Figure 2 breaks down the two scales into their sub-scale components. The highest scores are found in 'social interactions', 'organisation and routines' and 'space and furnishings' while the lowest scores are seen in 'personal care', 'pre-school activities', and 'adults working together'. Although the ratings averaged across all types of provision are broadly satisfactory, closer inspection within types of provision reveals some striking differences. In this sample many centres were found to be exciting places where children were challenged and supported in their learning and where the interactions between staff and children were sensitive and enabling. Unfortunately, other centres were characterised by hasty planning and poor implementation of the curriculum.

321

Figure 2. ECERS and ECERS-E sub-scale scores

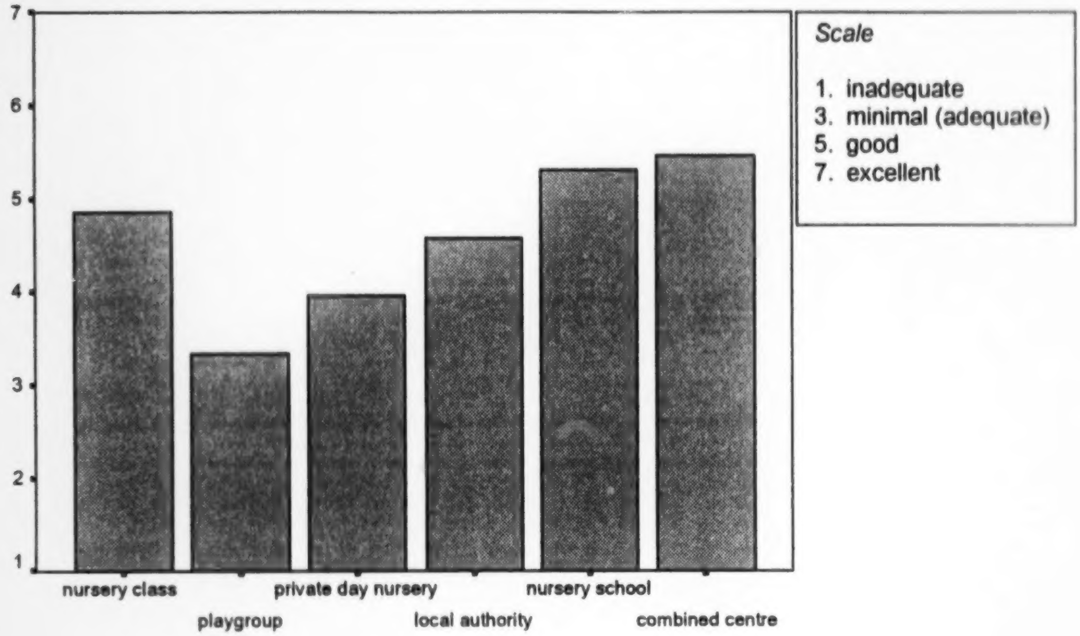


The profile of pre-school environments according to type of provision

We turn now to the analyses on differences in the environment according to type of provision. Figure 3 shows that the three types of provision managed by the LEA had significantly higher scores for total ECERS when compared to other types of provision. Statistical tests were carried out to identify exactly which types of provision differed significantly from each other. Local authority day centres, nursery classes, nursery schools and combined centres all had significantly higher scores than playgroups and private day nurseries. Additionally private day nurseries had a significantly higher total ECERS score than playgroups, and local authority centres had significantly lower total ECERS scores than nursery schools and combined centres.

We shall now consider ECERS sub-scales which focus specifically on aspects of the educational and care environment experienced by children and staff. Some sub-scales focus more on facilities while others describe pedagogical practices and the ways adults and children interact with one another in a purely social way. The pedagogy is described in terms of the balance between child-initiated activity and adult-led activities.

Figure 3. Total ECERS scores by pre-school type



The trends seen in the ECERS total scores are fairly consistent throughout the sub-scale scores (see Figures 4-10).

Figure 4. Space and furnishings by pre-school type

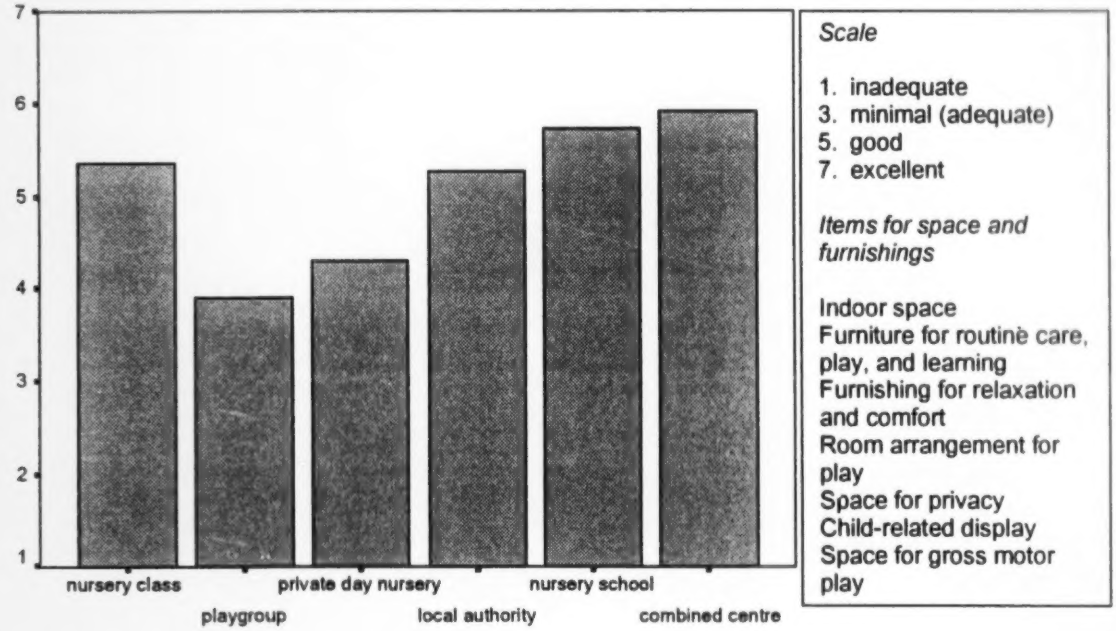


Figure 5. Personal care practices by pre-school type

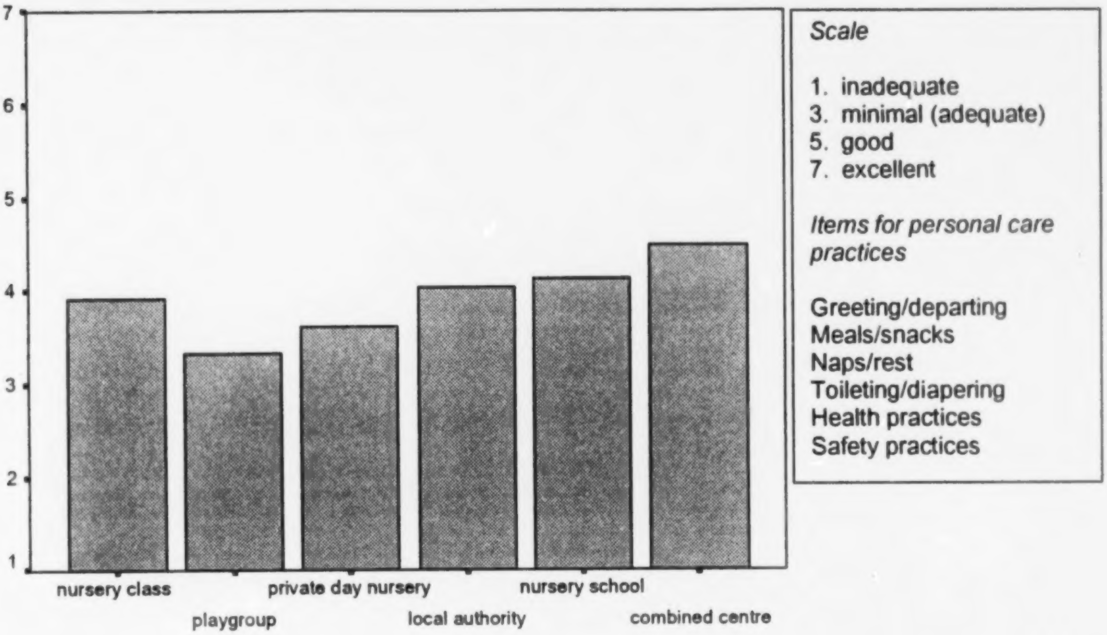


Figure 6. Language and reasoning by pre-school type

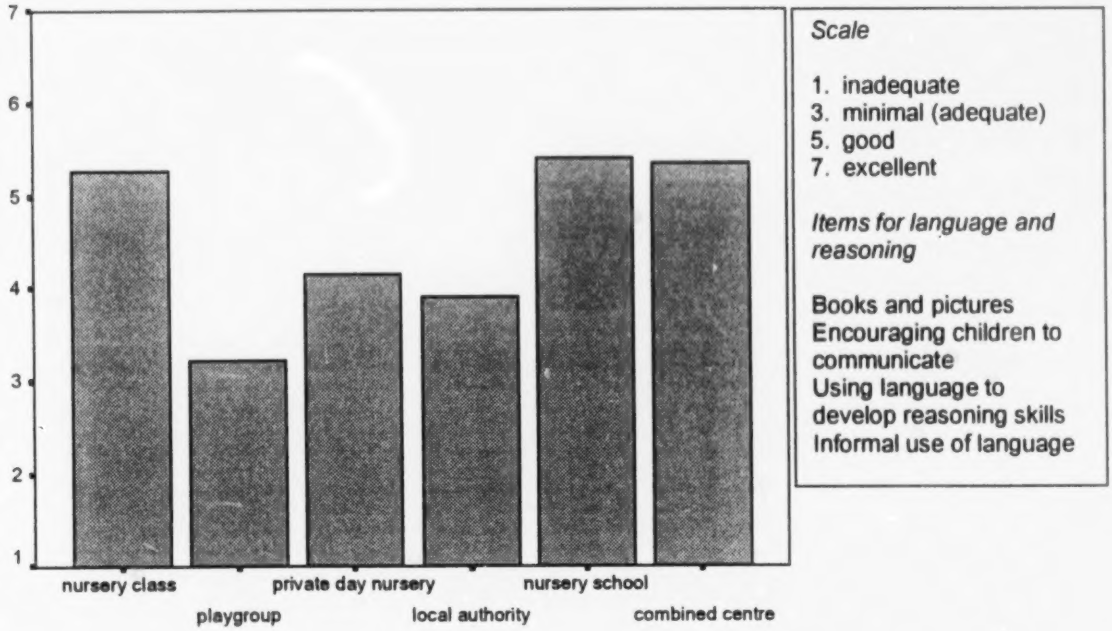
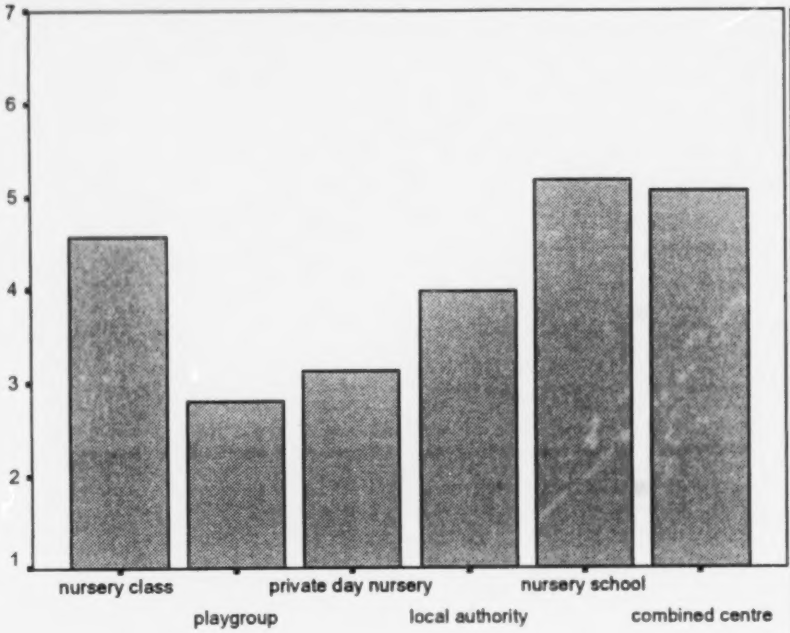


Figure 7. Pre-school activities by pre-school type



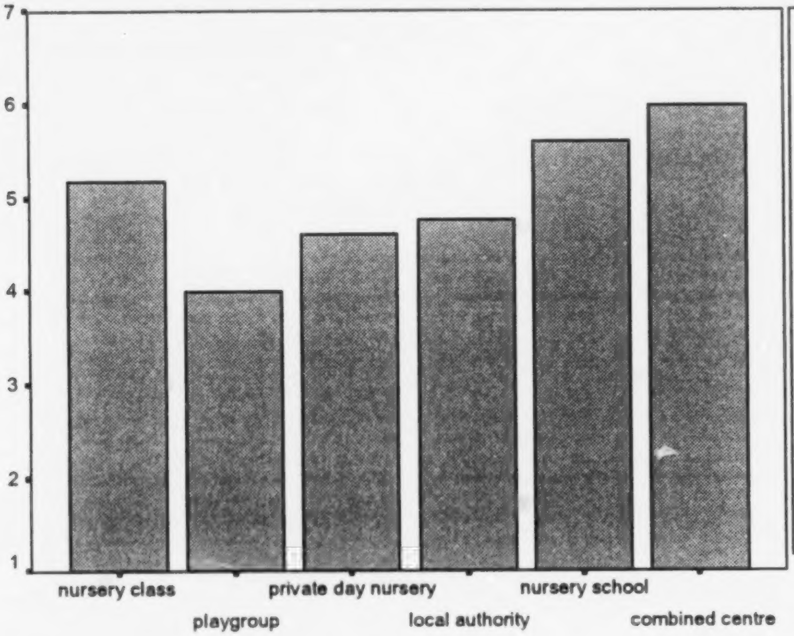
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for pre-school activities

Fine motor
Art
Music/movement
Blocks
Sand/water
Dramatic play
Nature/science
Maths/number
Use of TV/video/computers
Promoting acceptance of diversity

Figure 8. Social interaction by pre-school type



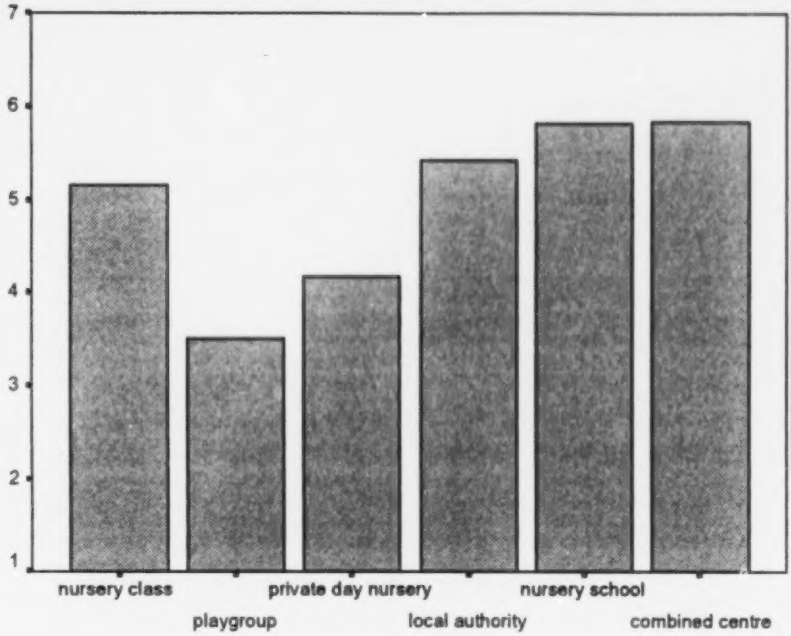
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for social interaction

Supervision of gross motor activities
General supervision of children (other than gross motor)
Discipline
Staff-child interactions
Interactions among children

Figure 9. Organisation and routines by pre-school type



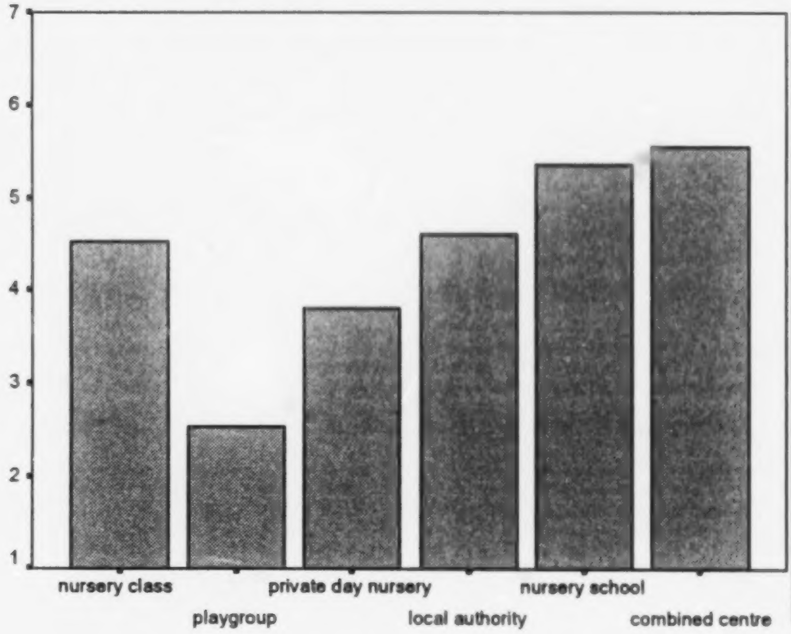
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for organisation and routine

Schedule
Group time
Provisions for children with disabilities
Free play

Figure 10. Adults working together by pre-school type



Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for adults working together

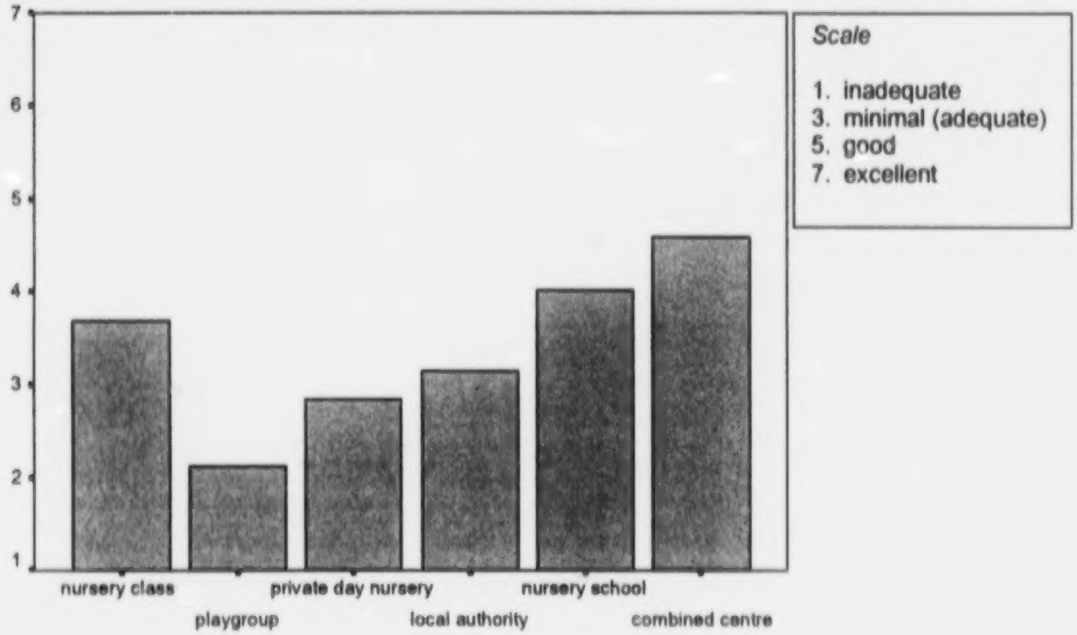
Provisions for parents
Provisions for personal needs of staff
Provisions for professional needs of staff
Staff interaction and cooperation
Supervision and evaluation of staff
Supervision and evaluation of staff

Of the six pre-school types, nursery classes, nursery schools and combinedcentres were rated consistently higher on all the sub-scales compared to other forms of provision. Playgroups had the lowest mean sub-scale score for all 7 sub-scales; private day nurseries had the second lowest mean sub-scale scores for all sub-scales except language and reasoning in which they were significantly higher than local authority day nurseries. Statistical tests revealed that there were significant differences for 6 out of the 7 sub-scales according to type of provision. (No significant pre-school differences were found in personal care routines.) The fine-grained statistical testing shows that there are broad bands in terms of quality measured on ECERS with the LEA provision always scoring highest followed by Local Authority day care, then private day nurseries, and finally playgroups.

Curricular dimensions in ECERS-E

The total ECERS-E scores for the 6 types of provision show an almost identical trend to the ECERS scores (see Figure 11).

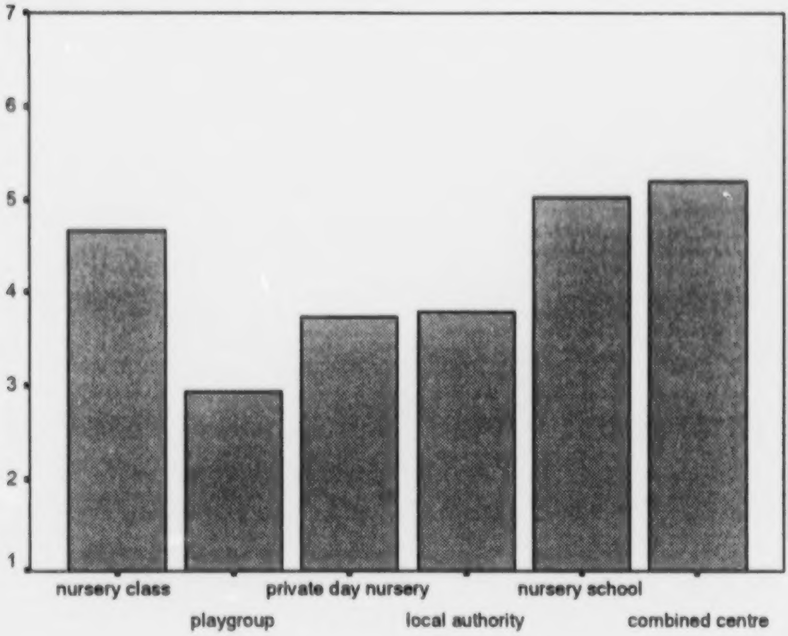
Figure 11. Total ECERS-E scores by pre-school type



LEA nursery classes, nursery schools and nursery schools combining care and education score most highly, significantly higher than playgroups and private day nurseries. Local authority (day care) centres score significantly higher than playgroups, *but not* private day nurseries; local authority (day care) centres also score significantly lower than *both* nursery schools and nursery schools combining care and education. Additionally, private day nurseries score significantly higher than playgroups, and centres combining care score significantly higher than nursery classes.

Moving away from total scores to sub-scale scores, on all four ECERS-E curricular dimensions the nursery schools and nursery schools combining care and education are rated more highly than playgroups and private day nurseries (see Figures 12-15).

Figure 12. Literacy by pre-school type



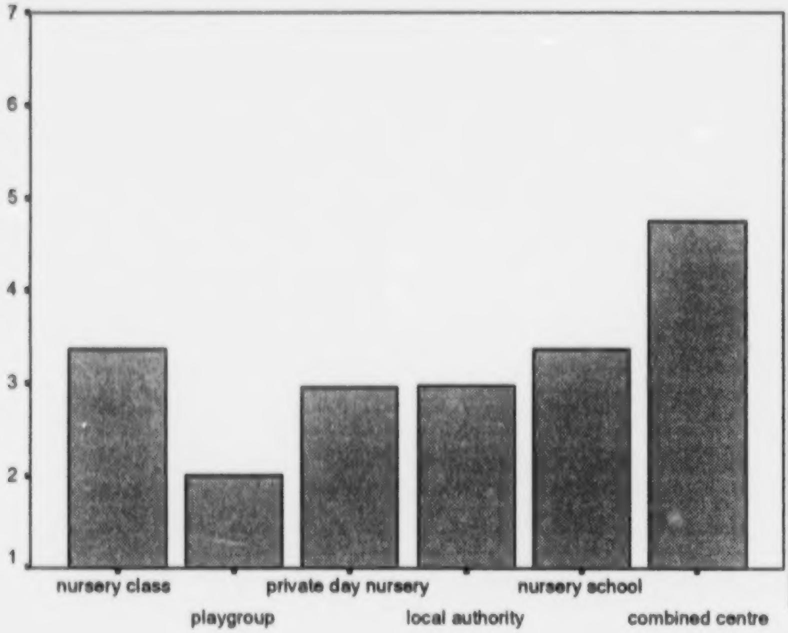
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for literacy

'Environmental print':
Letters and words
Book and literacy areas
Adult reading with the children
Sounds in words
Emergent writing/mark making
Talking and listening

Figure 13. Mathematics by pre-school type



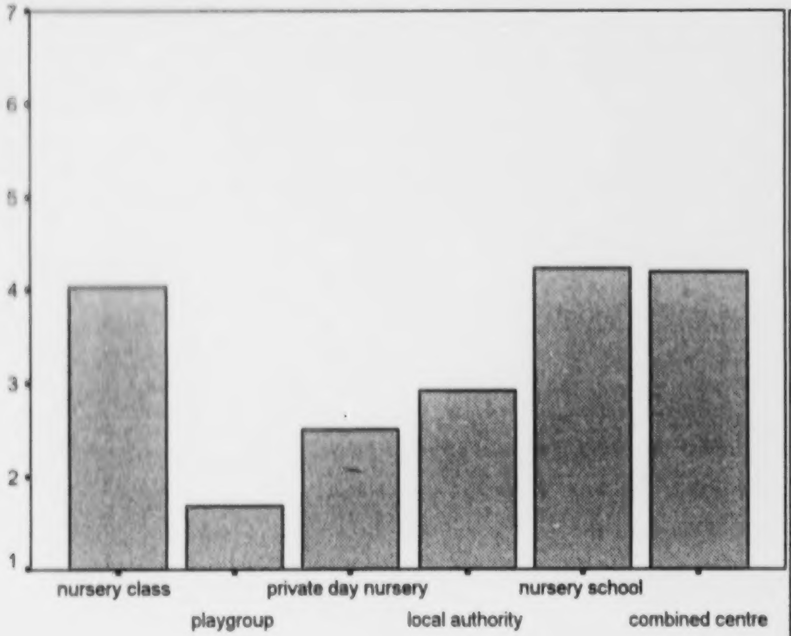
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for mathematics

Counting and the application of counting
Reading and writing simple numbers
Mathematical activities: Shape and space
Mathematical activities: Sorting matching and comparing

Figure 14. Science and Environment by pre-school type



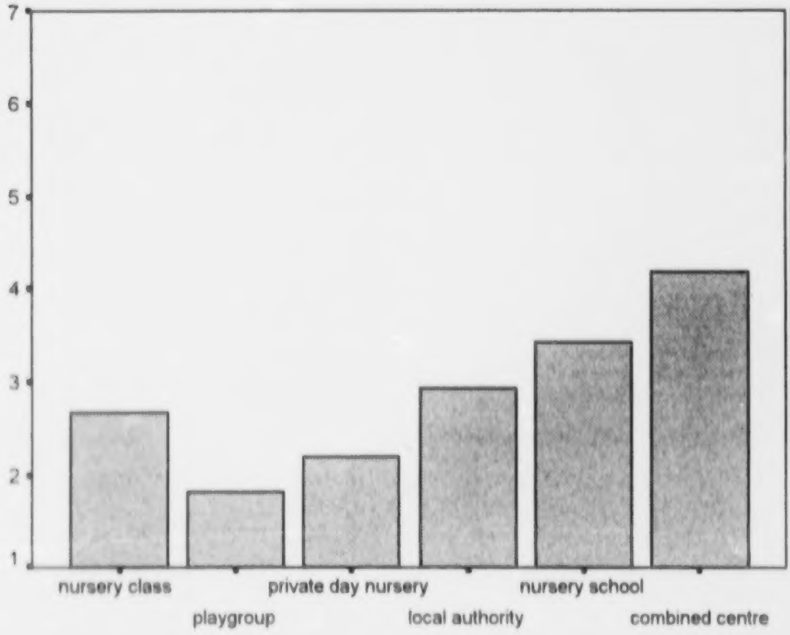
Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for science and environment

'Natural materials
Areas featuring science/science resources
Science activities: Science processes – non living
Science activities: Science processes – living processes and the world around us
Science activities: science processes – food preparation

Figure 15. Diversity by pre-school type



Scale

1. inadequate
3. minimal (adequate)
5. good
7. excellent

Items for the diversity sub-scale

Catering for individual learning needs
Gender equity and awareness
Multicultural education

To summarise, the findings on both rating scales showed that nursery schools, nursery schools combining care and education, and to a slightly lesser degree nursery classes, are rated in the 'good' range on both observations. Playgroups and private day nurseries are rated with lower 'quality' (minimal/adequate) provision while local authority day care (social service) centres are identified as medium provision. Social service centres combining care and education had significanlty lower quality of provision than nursery schools which combine education and care.

Focus on Combined Centres

The results were re-analysed using an alternative method of grouping the pre-school types to explore the effects of joining together the social services combined centres (which have added a small amount of 'education') with the nursery schools combined centres which came from a strong tradition of education. Thus allmaintained centres combining education and care were merged together in one group such that the 13 local authority daycentres which combined care and education were combined with the 7 nursery schools which also combined education and care. (Note that all other pre-school groupings remained the same.) This new grouping of provision was analysed statistically because it will show how the scores of the group of former nursery schools now combining care are affected by adding combinedcentres which come from a social services tradition.

Nursery schools (n=25)
Playgroups (n=34)
Private day nurseries (n=31)
Local authority centres (n=11); (these have not added 'education' through the appointment of teachers)
Nursery schools (n=20)
Combined centres (n=20)

The results for the total scores and sub-scale scores all show a fairly consistent pattern when the social services centres are added: the ratings of the combined centres group falls whereas ratings of the local authority centres often increase with the removal of the combined centres. With the original grouping the total ECERS scores for combined centres is the highest. When the scores for social services combined centres are added to this group their rating drops considerably and falls below that of the nursery schools and nursery classes. This indicates that the social services combined centres (which combine a small amount of education with care) diluted the quality of the nursery schools which have added care to education.

Re-grouping the combined centres leads to similar changes in the sub-scales. For example, the score for the personal care dimension shows this pattern again. The low score of the social services centres combining care and education dramatically brings down the group score of the nursery schools combining care and education.

Was there variation within type of provision?

Although there was some variation in ECERS and ECERS-E scores within each type of provision, the amount of variation within type of provision did not differ between the different types of provision. The means, standard deviation and range on ECERS and ECERS-E totals and subscores appear in Appendix D. A more graphic summary of the variation found within each type of provision will be seen in the box-plots in Figures 16 and 17. In them the horizontal line inside the box represents the median score on each sub-scale and the length of the box shows the range in which 75% of the centres fall. The lines reaching up and down (called 'whiskers') show the location of higher and lower scores in that particular distribution.

Although playgroups generally had fewer resources and lower environmental ratings, there were exceptions to this. Coldspring Playgroup (not the real name) had a very strong ECERS profile, usually scoring above the combined average for allcentres (see Playgroup 54 in the box plots in Appendix C). Coldspring is an 'Outlier' because it scored substantially higher than othercentres in the same group. It has good to excellent provision for furnishings, language and reasoning, science and the environment. These last two scales are closely related to curricular strength and attest to the sophisticated leaning environment achieved in this exceptional playgroup which had no place for staff to store their belongings and no separate room for staff or parents. Despite this the staff met daily for planning and participated regularly in PLA training courses. So, it was possible for playgroups to achieve high ECERS ratings,expecially on items which did not require expensive materials.

Figure 16. Box plot of mean ECERS score by pre-school type

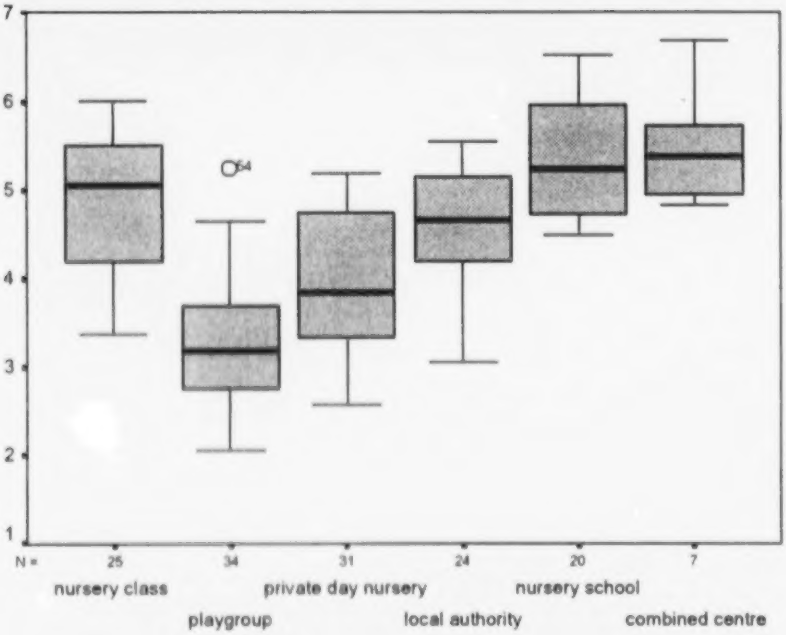
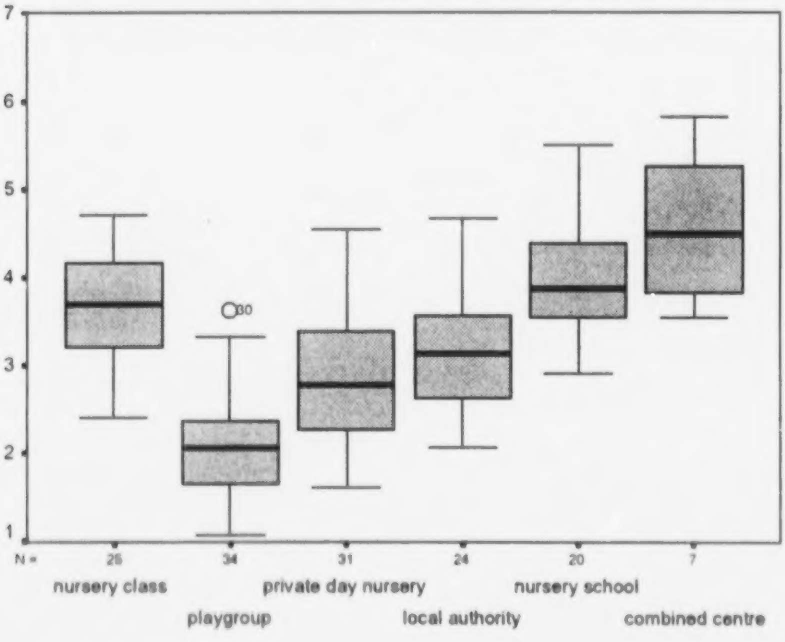


Figure 17. Box plot of mean ECERS-E score by pre-school type



Careful study of the box-plots shows that there was a range of quality within all the types of provision but that no one type of provision had exceptional amounts of 'spread'. This indicates that the use of means for comparisons earlier in the paper is appropriate and that there were few 'rogue' centres pulling down the means for any provision group (or 'angels' either, pulling them up).

THE RELATIONSHIP BETWEEN ECERS AND ECERS-E

The statistical correlation between scores on the two environmental scales was very high (r = 0.77) which is a clear demonstration that the different rating scales are tapping into overall 'quality' whilst measuring slightly different aspects of it. Most of the sub-scales are moderately correlated with one another. This means that centres high on one sub-scale tend to be high on others.

LOOKING FOR 'THEMES' IN THE RATING SCALES

Global dimensions of quality

Further analysis (principal components analysis) was used to examine the structure of the ECERS and the ECERS-E, and to establish whether any clear 'themes' could be identified in either scale. Analysis of the ECERS indicated the existence of two groups of items, that is, items which tended to cluster together. These were:

Factor 1: Activities and facilities

Sand/water
Opportunities for personal growth
Art
Child related displays
Blocks
Provision for professional needs of staff
Provision for personal needs of staff

Factor 2: Communication and supervision

General supervision of children
Discipline
Staff-child interactions
Informal use of language
Language to develop reasoning skills
Interactions among children

Factor 1 includes items related to 'activities and facilites' (for children, staff and parents); and factor 2 includes items related to 'communication and supervision'. Note that factor 2 does not require material resources.

A similar statistical exercise was carried out on the ECERS-E. This also showed 2 global factors. Again, the most important items to each group are listed below.

Factor 1: Curriculum Areas

'Environmental print' letters and words
Natural materials
Counting
Science resourcing

Talking and listening
Sounds in words

Factor 2: Diversity

Gender equity
Multicultural education
Book and literacy areas (provision for 'inclusive' literacy)

Factor 1 contains items related to the Desirable Learning Outcomes: literacy,numeracy and science. Factor 2 consists of only three items related to diversity and inclusive literacy.

Comparison between types of provision on the two dimensions

The scores of the 6 pre-school types on the 'activities and facilities' and 'communications and supervision' factors were compared. Nursery schools and nursery schools combining care are rated the highest for both factors and playgroups and private day nurseries are rated the lowest (see figures 18 and 19). Significant pre-school differences were found for the 'communication and supervision' factor. This is interesting in that these items do not require well-resouced premises or materials. Further analysis showed that, for the communications and supervision factor, nursery classes, nursery schools and nursery schools combining care had significantly higher ratings than playgroups, and additionally, nursery schools had significantly higher ratings than private day nurseries.

Figure 18. Mean scores for activities and facilities factor by pre-school type

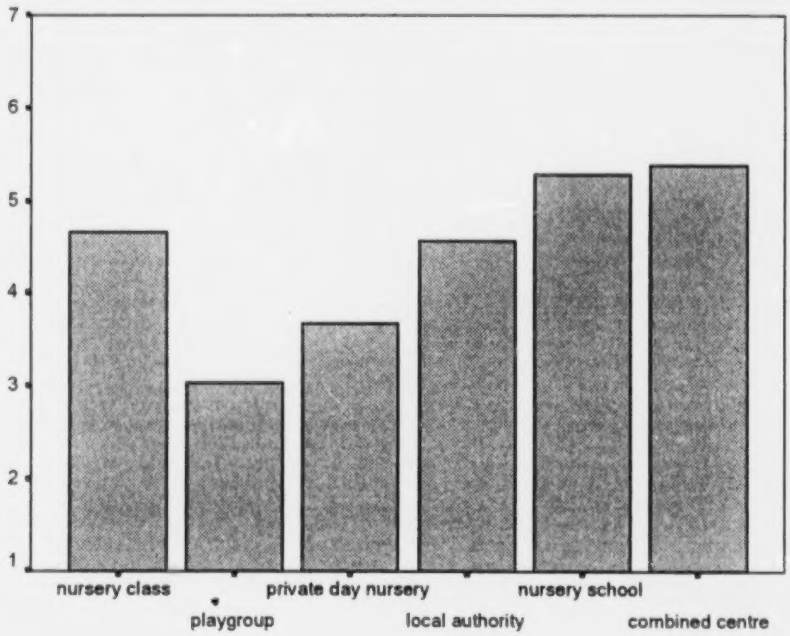
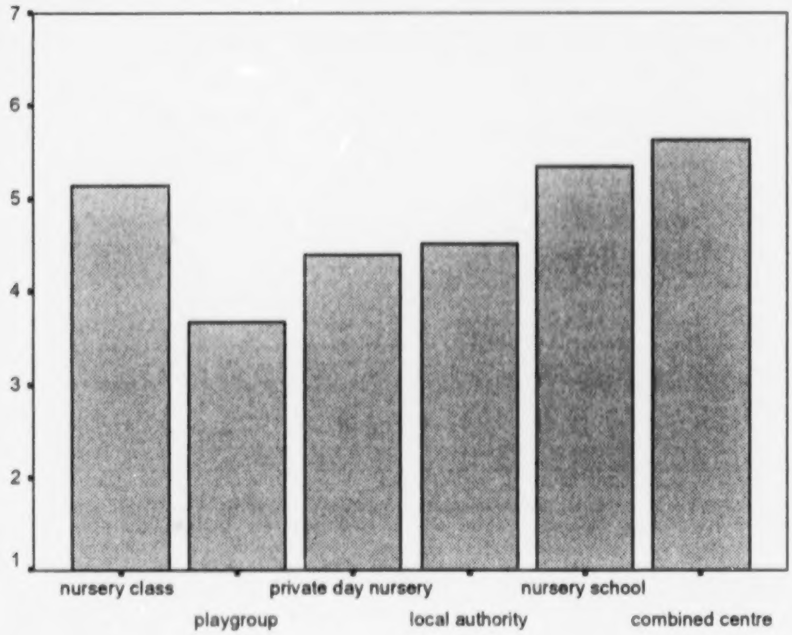


Figure 19. Mean score for communication and supervision factor by pre-school type



DISCUSSION

The main findings from this large study on the characteristics and quality of pre-school provision are supported by other sources. Research in London by Lera et al in 1996 showed higher scores on ECERS for nursery classes, followed by social services day nurseries and then playgroups. The latest OFSTED inspection report (1999) describes more favourably provision in the maintained sector (local authority day nurseries) followed by the private day nurseries, followed by the voluntary playgroups. Further confirmation of the stronger provision in the maintained sector is found in the latest inspection report for Wales (OHMCI, 1999).

Looking back at Figures 1 and 2 reveals the sub-scale scores for the entire sample, undivided as to type of provision. Across the sample, the totals and sub-scale scores on ECERS range from 4 to 5, just short of 'good' provision. Kwan (1997) summarised comparative data from studies using ECERS in other countries. How does the U.K. compare? The other countries with sub-scale means similar to the U.K. include Canada (a small group of 'superior' centres studied in Montreal) and Sweden along with one study from the U.S.A. (Head Start). Studies in Germany and New Zealand report sub-scale means just under 4 with studies in Bermuda reporting means closer to 3. Hence findings from other 'western' countries indicate that the U.K. is not too different from Sweden and parts of North America; it is marginally better than Germany and New Zealand. All these comparisons must be taken with some caution as they may not be fully representative of the country and only one of the studies reported here had a sample as large as that in the EPPE study.

Although the EPPE results present a picture of satisfactory pre-school environments, centres varied considerably in their ECERS profiles according to type of provision. The traditional nursery schools and LEA nursery-combined-with-care usually had the highest scores, often close to 'excellent', followed by nursery classes. Unfortunately many young children are attending centres where the provision is 'minimal' rather than 'good'. The playgroups and private day care nurseries typically had the lowest scores, with social services day care nurseries somewhere in between. This study shows clearly that well-resourced pre-school centres which had a history of 'education' (including a more substantial number of trained teachers, LEA in-service training, Ofsted 'Section 10' rather than 'pre-school Section 5' inspection) were providing the highest quality of care and education. The centres from the 'care' tradition, despite their more favourable ratios, were offering a different level of care and education. It is relevant here to mention that care-oriented provision usually offers the lowest salaries to staff, employs workers with the lowest level of qualifications, and has limited access to training and higher staff turnover. We found that provision above the 'minimal' level was concentrated in well-resourced centres.

The group of seven LEA nursery schools with a long history of combined education and care had very high ratings when they were a stand-alone group. When the 13 social service combined centres were grouped with them, the average score of the new grouping was depressed (or the 'quality became diluted'). This indicates that the newer emphasis on 'education' in social service nurseries, established by introducing one (often part-time) teacher, is slow to filter through the system and that the more traditional social services day care nurseries (when grouped on their own) had adequate to good scores.

This preliminary report on the EPPE centres has concluded that they vary in 'quality' as measured on an international instrument (devised initially in North America) and one devised in the UK based on the Desirable Learning Outcomes. It is necessary to ask whether some types of provision have been 'disadvantaged' by the structure and the content of ECERS. For example, it is not easy for a playgroup to provide special facilities for parents or for staff, both of which are required for high ECERS ratings on certain items. Although it remains a possibility that ECERS disadvantaged some sectors of provision, the pattern of results seen in the ECERS-E analyses was so similar to the ECERS findings that we cannot conclude that ECERS is inappropriate to the UK. Because the curriculum sub-scales in ECERS-E were devised to tap educational and care provision based on the UK Desirable Learning Outcomes, they are well tuned to assess English provision and their agreement with the original ECERS validates its use here in England. Moreover the playgroups were rated rather low on the 'communication and supervision' factor which requires no material resources.

To conclude, this study found that the standard of education and care in pre-school provision was of adequate standard in the vast majority of settings. In the 'educational' settings, it was particularly good. Future papers in this series will describe the outcomes of such provision in terms of children's cognitive, social and behavioural development. When the 'value added' analyses of children's outcomes are available, we will know better whether these observational profiles predict children's longer-term intellectual, social and behavioural progress. If they do, we will have established a firm link between educational and care processes and children's developmental outcomes. Although studies using the ECERS in other countries have sometimes shown such links, their applicability to the UK needs to be confirmed. The identification of 'quality characteristics' in pre-schools awaits confirmation from analyses of children's progress when entering school and at Key Stage 1.

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Appendix A.

Following are four sample items from the ECERS-Revised

Item	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
34. **Schedule**							
Y N	1.1 Schedule is *either* too rigid, leaving no time for individual interests, OR too flexible (chaotic), lacking a dependable sequence of daily events.*	Y N	3.1 Basic daily schedule exists that is familiar to children (Ex. routines and activities occur in relatively the same sequence most days).	Y N	5.1 Schedule provides balance of structure and flexibility (Ex. regularly scheduled outdoor play period may be lengthened in good weather).	Y N	7.1 Smooth transitions between daily events (Ex. materials ready for next activity before current activity ends; most transitions handled a few children at a time rather than whole group).
		Y N	3.2 Written schedule is posted in room and relates generally to what occurs.**	Y N	5.2 A variety of play activities occur each day, some teacher directed and some child initiated.	Y N	7.2 Variations made in schedule to meet individual needs (Ex. shorter story time for child with short attention span; child working on project allowed to continue past scheduled time; slow eater may finish at own pace).
		Y N	3.3 At least one indoor and one outdoor play period (weather permitting) occurs daily.	Y N	5.3 A substantial portion of the day is used for play activities.		
		Y N	3.4 Both gross motor and less active play occur daily.	Y N	5.4 No long period of waiting during transitions between daily events.		

*34. **Notes for Clarification***

* Daily events refers to time for indoor and outdoor play activities as well as routines such as meals/snacks, nap/rest, and greeting/departing.

** The written schedule need not be followed to the minute. The intent of this indicator is that the general sequence of events is being followed.

Ratings are to be assigned in the following way, taking into account exact indicators for each item (see Appendix X):

- A score of 1 must be given if any indicator under 1 is scored "Yes".
- A rating of 2 is given when all indicators under 1 are scored "No" and at least half of the indicators under 3 are scored "Yes".
- A rating of 3 is given when all indicators under 1 are scored "No" and all indicators under 3 are scored "Yes".
- A rating of 4 is given when all requirements for 3 are met and at least half of the indicators under 5 are scored "Yes".
- A rating of 5 is given when all requirements for a 3 are met and all indicators under 5 are scored "Yes".
- A rating of 6 is given when all requirements for 5 are met and at least half of the indicators under 7 are scored "Yes".
- A rating of 7 is given when all requirements for a 5 are met and all indicators under 7 are scored "Yes".
- A score of NA (Not Applicable) may only be given for indicators or for entire items when permitted as shown on the scoresheet.
  Indicators which are scored NA are not counted when determining the rating for an item. Items scored NA are not counted when calculating subscale and total scale scores.

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Item	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
17. **Using language to develop reasoning skills**							
	Y N 1.1 Staff do not talk with children about logical relationships (Ex. ignore children's questions and curiosity about why things happen, do not call attention to sequence of daily events, differences and similarity in number, size, shape; cause and effect). Y N 1.2 Concepts* are introduced inappropriately (Ex. concepts too difficult for age and abilities of children; inappropriate teaching methods used such as worksheets without any concrete experiences; teacher gives answers without helping children to figure things out).		Y N 3.1 Staff sometimes talk about logical relationships or concepts (Ex. explain that outside time comes after snacks, point out differences in sizes of blocks child used). Y N 3.2 Some concepts are introduced appropriately for ages and abilities of children in group, using words and concrete experiences (Ex. guide children with questions and words to sort big and little blocks or to figure out the cause for ice melting).		Y N 5.1 Staff talk about logical relationships while children play with materials that stimulate reasoning (Ex. sequence cards, same-different games, size and shape toys, sorting games, number and math games). Y N 5.2 Children encouraged to talk through or explain their reasoning when solving problems (Ex. why they sorted objects into different groups; in what way are two pictures the same of different).		Y N 7.1 Staff encourage children to reason throughout the day, using actual events and experiences as a basis for concept development (Ex. children learn sequence by talking about their experiences in the daily routine or recalling the sequence of a cooking project). Y N 7.2 Concepts are introduced in response to children's interests or needs to solve problems (Ex. talk children through balancing a tall block building; help children figure out how many spoons are needed to set table).

*17. **Note for Clarification***

* Concepts, include same/different, matching, classifying, sequencing, one-to-one correspondence, spatial relationships, cause and effect.

339

340

32. **Staff-child interactions***

Item	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
Y N	1.1 Staff members are not responsive to or not involved with children (Ex. ignore children, staff seem distant or cold).	Y N	3.2 Staff usually respond to children in a warm, supportive manner (Ex. staff and children seem relaxed, voices cheerful, frequent smiling).	Y N	5.1 Staff show warmth through appropriate physical contact (Ex. pat child on the back, return child's hug).	Y N	7.1 staff seem to enjoy being with the children.
Y N	1.2 Interactions are unpleasant (Ex. voices sound strained and irritable).	Y N	3.2 Few, if any, unpleasant interactions.	Y N	5.2 Staff show respect for children (Ex. listen attentively, make eye contact, treat children fairly, do not discrimate).	Y N	7.2 Staff encourage the development of mutual respect between children and adults (Ex. staff wait until children finish asking questions before answering; encourage children in a polite way to listen when adults speak).
Y N	1.3 Physical contact used principally for control (Ex. hurrying children along) or inappropriately (Ex. unwanted hugs or tickling).			Y N	5.3 Staff respond sympathetically to help children who are upset, hurt, or angry.		

32. **Note for Clarification**

* While the indicators in this item generally hold true across a diversity of cultures and individuals, the ways in which they are expressed may differ. For example, direct eye contact in some cultures is a sign of respect; in others, a sign of disrespect. Similarly some individuals are more likely to smile and be demonstrative than others. However, the requirements of the indicators must be met, although there can be some variation in the way this is done.

4. Room arrangement for play

	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
Y N	1.1 No interest centers* defined.	Y N	3.1 At least two interest centers defined.	Y N	5.1 At least three interest centers defined and conveniently equipped (Ex. water provided near art area; shelving adequate for blocks and manipulatives).	Y N	7.1 At least five different interest centers provide a variety of learning experiences.
Y N	1.2 Visual supervision of play area is difficult.	Y N	3.2 Visual supervision of play area is not difficult.			Y N	7.2 Centers are organized for independent use by children (Ex labeled open shelves; labeled containers for toys; open shelve are not over-crowded; play spac near toy storage).
		Y N	3.3 Sufficient space for several activities to go on at once (Ex. floor space for blocks, table space for manipulatives, easel for art).	Y N	5.2 Quiet and active centers placed to not interfere with one another (Ex. reading or listening area separated from blocks or housekeeping).		
		Y N NA	3.4 Most spaces for play are accessible to children with disabilities enrolled in the group. *NA permitted.*	Y N	5.3 Space is arranged so most activities are not interrupted (Ex. shelves placed so children walk around, not through, activities; placement of furniture discourages rough play or running).	Y N	7.3 Additional materials available to add to or change centers.

4. Note for Clarification

* An interest center is an area where materials, organized by type, are stored so that they are accesible to children, and appropriately furnished play space is provided for children to participate in a particular kind of play. Examples of interest centers are art activities, blocks, dramatic play, reading, nature/science, and manipulatives/fine motor.

Question

(7.3) Are there any additional materials available that you add to the interest centers?

Following are three sample items from the ECERS-Extension

Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7

3. Adult reading with the children

Y N	1.1 Adults rarely read to the children.	Y N	3.1 An adult reads with the children most days.	Y N	5.1 Children take an active role in group reading during which discussion of the words and / or story usually takes place.	Y N	7.1 There is discussion about print and letters as well as content.
		Y N	3.2 Children are encouraged to join in with repetitious elements of the text.	Y N	5.2 Children are encouraged to conjecture about and comment on the text.	Y N	7.2 There is support material for the children to engage with the story by themselves e.g. tapes, flannel board, displays etc.
						Y N	7.3 There is evidence of one to one reading with some children.

	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7

1. Natural materials

	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
Y N	1.1 There is little access inside the centre to natural materials (Ex. plants, rocks, pebbles, fir cones).	Y N	3.1 Some natural materials are available and are accessible to the children indoors.	Y N	5.1 Natural materials are used beyond decoration to illustrate specific concepts (Ex. growth - planting seeds or bulbs).	Y N	7.1 Children are encouraged to identify and explore a wide range of natural phenomena in their environment outside the centre and talk about/describe them.
		Y N	3.2 Natural materials are accessible outdoors, e.g. plants.	Y N	5.2 Through regular activities children are encouraged to explore the characteristics of natural materials (Ex. things that are smooth or rough).	Y N	7.2 Children are encouraged to bring natural objects into the centre.
				Y N	5.3 Adults show appreciation, curiosity and respect for nature when with children (Ex. curiosity and interest rather than fear or disgust about fungi, insects, worms, etc.).	Y N	7.3 Children are encouraged to make close observations of natural objects and/or draw them.

347

348

Diversity : Planning for individual learning needs. Ask to see the records kept on individual children.

	Inadequate 1	2	Minimal 3	4	Good 5	6	Excellent 7
Y N	1.1 All children in the setting are offered the same range of materials and activities, rather than having activities matched to their age or aptitude.	Y N	3.1 Some additional provision is made for individuals or groups with specific needs.*	Y N	5.1 The range of activities provided enables children of all abilities and from all backgrounds to participate in a satisfying + cognitively demanding way.***	Y N	7.1 The range of activities provided, together with the organisation of social interaction, enables children of all abilities and backgrounds ot participate at an appropriate level in both individual and common tasks.***
Y N	1.2 If planning occurs there is no mention of specific groups or individuals.	Y N	3.2 Some of the planning shows differentiation for particular individuals or groups Ex. simple peg puzzles to complex jigsaws, fat paint brushes to watercolour brushes.	Y N	5.2 Day to day plans are drawn up with the specific aim of developing activities that will satisfy the needs of each of the children either individually or as groups.	Y N	7.2 Planning shows attention to adult participation to individual/paired/group tasks and to the range of levels at which a task or activity may be experienced.
Y N	1.3 If records are kept, they describe activities rather than the childs response or success in that activity.+ Ex. Ticked checklists or sampling of childrens work.	Y N	3.3 Childrens records indicate some awareness of how individuals have coped with activities, or of the appropriateness of activities +Ex. 'need biligual support' 'could only manage to count to 3'.	Y N	5.3 Children are observed regularly , and individual records are kept on their progress indifferent aspects of their development+.	Y N	7.3 Children are observed regularly, and their progress is recorded and used to inform planning.
		Y N	3.4 Staff show some awareness of the need to support and recognise childrens' diferences, by giving praise and public approval to children of all abilities	Y N	5.4 Staff regularly draw attention of individuals to differences in a positive and sensitive manner.	Y N	7.4 Staff regularly draw the attention of the whole group to difference and ability in a positive way.****

Note*= Ex. children of different ages or developmental stage, bilingual support for bilingual children, specific support for children with learning difficulties or a disability.
Note**= Ex. staff demonstrate in playing with children the different tasks which can be attempted with a construction toy, computer game.
Note***= Ex. children of different ages or aptitudes may be paired for a particular task, such as reporting on the weather, selecting stories for a group, exploring a new computer programme, or an adult may focus on working with one group or activity on a particular occasion.
Note****= Ex. show disabled individuals or those with learning difficulties in a positive light or individual capability is celebrated e.g. bilingualism is seen as an asset.

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Effective Provision of Pre-school Education (EPPE)

Overview of the Project

This paper is an abbreviated version of Technical Paper 6, Characteristics of the Centres in the EPPE Sample : Observational Profiles. The analyses outlined in Paper 6a are presented in statistical and graphical detail in the fuller paper. The rationale behind the choice of research tools and statistical strategies appears in the longer version of this paper.

The Effective Provision of Pre-School Education (EPPE) project is a longitudinal study which investigates the attainment and development of children between the ages of 3 and 7 years. Three thousand children were recruited to the study over the period January 1997 to April 1999 from 141 pre-school centres. Initially 114 centres from four types of provision were selected for the study but in September 1998 an extension to the main study was implemented to include innovative forms of provision, including 'combined education and care'.

Both qualitative and quantitative methods (including multilevel modelling) have been used to explore the effects of individual pre-school centres on children's attainment and social/behavioural development at entry to school and any continuing effects on such outcomes at the end of Key Stage 1 (age 7). In addition to centre effects, the study investigates the contribution to children's development of individual and family characteristics such as gender, ethnicity, language, parental education and employment. This overview describes the research design used in investigating the impact of pre-school provision on children's developmental progress. A parallel study is being carried out in Northern Ireland.

THE NEED FOR RESEARCH

There have been many initiatives intended to improve educational outcomes for young children. Will these initiatives work? Will they enable children to enter school 'more ready' to learn, or achieve more at the end of Key Stage 1? Which are the most effective ways to educate young children? The EPPE research is part of the new emphasis on ensuring 'a good start' for children.

There has been little large-scale, systematic research on the effects of early childhood education in the UK. The 'Start Right' Enquiry (Ball 1994) reviewed the evidence of British research and concluded that small-scale studies suggested a positive impact but that large-scale research was inconclusive. The Start Right enquiry recommended more rigorous longitudinal studies with baseline measures so that the 'value added' to children's development by pre-school education could be established. Research evidence elsewhere on the effects of different kinds of pre-school environment on children's development (Melhuish et al. 1990; Melhuish 1993; Sylva & Wiltshire 1993; Schweinhart & Weikart 1997; Borge & Melhuish, 1995; National Institute of Child Health Development 1997) suggests positive outcomes. In the UK there is a long tradition of variation in pre-school provision both between types (e.g. playgroup, local authority or private nursery or nursery classes) and in different parts of the country reflecting Local Authority funding and geographical conditions (i.e. urban/rural). The EPPE project is the first large-scale British study on the effects on children's development of different kinds of pre-school provision and the impact of attendance at individual centres.

RESEARCH METHODS

The EPPE project investigates three issues which have important implications for policy and practice:

- the effects on children of different types of pre-school provision,
- the characteristics (e.g. interaction styles, staff training) of more effective pre-school centres, and
- the interaction between child and family characteristics and the kind of pre-school provision a child experiences.

An educational effectiveness research design was chosen to investigate these topics. This enabled the research team to investigate the progress and development of individual children (including the impact of personal, socio-economic and family characteristics), and the effect of individual pre-school centres on children's outcomes at both entry to school (the start of Reception) and at the end of Key Stage 1. The EPPE project is designed to examine both the impact of type of pre-school provision as well as allow the identification of particular pre-school characteristics which have longer term effects. In addition, the project explores the impact of pre-school provision for different groups of children and the extent to which pre-schools are effective in promoting different kinds of outcomes (cognitive, attitudinal and social/behavioural). The design is described fully in Sylva et al 1999.

The aims of the EPPE Project

- To produce a detailed description of the 'career paths' of a large sample of children and their families between entry into pre-school education and completion (or near completion) of Key Stage 1.
- To compare and contrast the developmental progress of 3,000+ children from a wide range of social and cultural backgrounds who have differing pre-school experiences including early entry to Reception from home.
- To separate out the effects of pre-school experience from the effects of education in the period between Reception and Year 2.
- To establish whether some pre-school centres are more effective than others in promoting children's cognitive and social/emotional development during the pre-school years (ages 3-5) and across Key Stage 1 (5-7 years).
- To discover the individual characteristics of pre-school education and care in those centres found to be most effective.
- To investigate differences in the progress of different groups of children, e.g. second language learners of English, children from disadvantaged backgrounds and both genders.
- To investigate the medium-term effects of pre-school education on educational performance at Key Stage 1 in a way which will allow the possibility of longitudinal follow-up at later ages to establish long-term effects, if any.

The sample: regions, centres and children

The EPPE sample was stratified by type of centre and geographical location.

- Six English Local Authorities (LAs) in five regions were chosen strategically to participate in the research. These were selected to cover provision in urban, suburban and rural areas and a range of ethnic diversity and social disadvantage. (Another related project covering Northern Ireland was instituted in April 1998 [Melhuish et al. 1997]).
- Six main types of provision are included in the study (the most common forms of current provision; *playgroups*, local authority or voluntary *day nurseries*, *private day nurseries*, *nursery schools*, *nursery classes*, and centres *combining care and education*. Centres were selected randomly within each type of provision in each authority.

In order to enable comparison across type of provision the researchers recruited about 500 children, 20 in each of 20-25 centres, from the six types of provision. This yielded a total sample of approximately

3000 children and 141 centres[1]. Within each LA, centres of each type were selected by stratified random sampling.

Children and their families were selected randomly in each centre to participate in the EPPE Project. All parents gave written permission for their children to participate.

In order to examine the impact of no pre-school provision a sample of 200+ children was recruited from families who did not use pre-school provision.

Details about length of sessions, number of sessions normally attended per week and child attendance have been collected to enable the amount of pre-school education experienced to be quantified for each child in the sample.

Child assessments

Around the third birthday, or up to a year later if the child entered pre-school provision after age three, each child was assessed by a researcher on four cognitive tasks: verbal comprehension, naming vocabulary, knowledge of similarities seen in pictures, and block building. A profile of the child's social and emotional adjustment was completed by the pre-school educator who knew the child best. If the child changed pre-school before school entry, he or she was assessed again. At school entry, a similar cognitive battery was administered along with Early Number Concepts and knowledge of the alphabet and rhyme/alliteration. The Reception teacher completed the social emotional profile.

Further assessments were made at exit from Reception and at the end of Years 1 and 2. In addition to standardised tests of reading and mathematics, information on National Assessments will be collected along with attendance and special needs. At age 7, children will also be invited to describe their attitudes to school.

Information from families

1) Information on individual 'child factors' such as gender, language, health and birth order was collected at parent interview.

2) Family factors were investigated also. Parent interviews provided detailed information about parent education, occupation and employment history, family structure and attendance history. In addition, details about the child's day care history, parental attitudes and involvement in educational activities (e.g. reading to child, teaching nursery rhymes, television viewing etc) have been collected and analysed.

Pre-school Characteristics and Processes

Regional researchers liaised in each authority with a Regional Coordinator, a senior local authority officer with responsibility for Early Years who arranged 'introductions' to centres and key staff. Regional researchers interviewed centre managers on: group size, child staff ratio, staff training, aims, policies, curriculum, parental involvement, etc.

'Process' characteristics such as the day-to-day functioning within settings (e.g. child-staff interaction, child-child interaction, and structuring of children's activities) were also studied using the Early Childhood Environment Rating Scale (ECERS, Harms, Clifford & Cryer 1998). The ECERS includes the following sub-scales:

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[1] The nursery school and combined centre samples were added in 1998 and their cohorts will be assessed somewhat later; results will be reported separately and in combined form.

- Space and furnishings
- Personal care practices
- Language and reasoning
- Pre-school activities
- Social interaction
- Programme structure
- Adults working together

To assess the more educational aspects of provision Sylva, Siraj-Blatchford, Taggart & Colman (unpublished) developed four additional ECERS sub-scales describing educational provision in terms of: Language, Mathematics, Science and the Environment, and Diversity.

Case Studies

Detailed qualitative data will be collected using case studies of "effective" pre-school practices (chosen retrospectively as 'more effective' on the basis of the multilevel analyses of intake and outcome measures covering the period from entry to the pre school up to entry into reception). This will add fine-grained detail to show how 'processes' within centres articulate, establish and maintain good practice. These detailed case studies will use a variety of methods of data gathering, including documentary analysis, interviews and observations. The results will help to illuminate the characteristics of more successful pre-school centres and assist in the generation of guidance on good practice. Particular attention will be paid to parent involvement, teaching and learning processes, child-adult and child-child interaction and social factors in learning.

ANALYTIC STRATEGY

The EPPE research was designed to enable the linking of three sets of data: information about children's attainment and development (at different points in time), information about children's personal, social and family characteristics (e.g. child age and gender, occupation of parents etc), and information about pre-school experience (type of centre and its characteristics).

Longitudinal research is essential to enable the impact of child characteristics (personal, social and family) to be disentangled from any influence related to the particular pre-school centre attended. Multilevel models investigate the clustered nature of the child sample, children being nested within centres and centres within regions (Goldstein, 1987).

Given the disparate nature of children's pre-school experience it is vital to ensure that the influences of age at assessment, amount and length of pre-school experience and pre-school attendance record are accounted for when estimating the effects of pre-school education. Predictor variables for attainment at entry to reception will include prior attainment (verbal and non-verbal sub scales), social/emotional profiles, and child characteristics (personal, social and family). The EPPE multilevel analyses will seek to incorporate adjustment for measurement error and to examine differences in the development of different groups of children at entry to pre-school and again at entry to reception classes. The extent to which any differences increase/decrease over this period will be explored, enabling equity issues to be addressed.

SUMMARY

This "educational effectiveness" design of the EPPE research study enables modelling of the complicated effects of amount and type of pre-school provision (including attendance) experienced by children and their personal, social and family characteristics on subsequent progress and development. Assessment of both cognitive and social/behavioural outcomes has been made. The use of multilevel models for the analysis enables the impact of both type of provision and individual centres on children's pre-school outcomes (at age 5 and later at age 7) to be investigated. Moreover, the relationships between pre-school characteristics and children's development can be explored. The results of these analyses and the findings from the qualitative case studies of selected centres will inform both policy and practice. A series of 12 technical working papers will summarise the findings of the research.

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